DICOM Conformance Statement

Product Name: ACUSON X Family
Ultrasound System
Release:
ACUSON X600 VA10
ACUSON X700 1.0/1.1
ACUSON X700 VB20
Date: September 2014

SIEMENS

1 CONFORMANCE STATEMENT OVERVIEW

This Conformance Statement applies to the following ACUSON X Family products and versions:

Product	Product Version	<Software ID>	<Product Name> in (0018,1020)
ACUSON X600	VA10	5.1.xxx	X600
ACUSON X700	1.0/1.1	5.0.xxx	X700
ACUSON X700	VB20	5.1.xxx	X700

For all DICOM image files generated by the above mentioned ACUSON X Family products, the following attribute values are applicable:

Software Versions (0018,1020)	Set to "<Software ID>"
Manufacturer's Model Name (0008,1090)	Set to "ACUSON <Product Name>"

For all DICOM Comprehensive Structured Reports generated by the above mentioned ACUSON X Family products, the following attribute values are applicable:

Software Versions (0018,1020)	Set to "SR1.0_<Software ID>_<Product Name>"
Manufacturer's Model Name (0008,1090)	Set to "ACUSON X Family"

The **ACUSON X Family Ultrasound System** supports the following DICOM Application Entities:

- Verification
  - Verification AE
- Transfer
  - Storage AE
  - Storage Commitment AE
- Query / Retrieve
  - Query AE
  - Retrieve AE
- Workflow Management
  - Worklist AE
  - MPPS AE
- Print Management
  - Print AE

SOP Classes	Service Class User (SCU)	Service Class Provider (SCP)
VERIFICATION		
Verification AE		
Verification	Yes	Yes
TRANSFER		
Storage AE		
Ultrasound Image Storage (Retired)	Yes	Yes
Ultrasound Image Storage	Yes	Yes
Ultrasound Multi-frame Image Storage (Retired)	Yes	Yes

SOP Classes	Service Class User (SCU)	Service Class Provider (SCP)
Ultrasound Multi-frame Image Storage	Yes	Yes
Secondary Capture Image Storage	Yes	Yes
Comprehensive SR	Yes	No
Storage Commitment AE		
Storage Commitment Push Model	Yes	No
QUERY / RETRIEVE		
Query AE		
Study Root Query/Retrieve Information Model - FIND	Yes	No
Retrieve AE		
Study Root Query/Retrieve Information Model - MOVE	Yes	No
WORKFLOW MANAGEMENT		
Worklist AE		
Modality Worklist	Yes	No
MPPS AE		
Modality Performed Procedure Step	Yes	No
PRINT MANAGEMENT		
Print AE		
Basic Grayscale Print Management Meta SOP Class	Yes	No
Basic Color Print Management Meta SOP Class	Yes	No
Basic Grayscale Image Box SOP Class	Yes	No
Basic Color Image Box SOP Class	Yes	No
Print Job SOP Class	Yes	No

SOP Class Name	SOP Class UID	Category
Verification AE		
Verification	1.2.840.10008.1.1	Verification
Storage AE		
Ultrasound Image Storage (Retired)	1.2.840.10008.5.1.4.1.1.6	Transfer
Ultrasound Image Storage	1.2.840.10008.5.1.4.1.1.6.1	Transfer
Ultrasound Multi-frame Image Storage (Retired)	1.2.840.10008.5.1.4.1.1.3	Transfer
Ultrasound Multi-frame Image Storage	1.2.840.10008.5.1.4.1.1.3.1	Transfer
Secondary Capture Image Storage	1.2.840.10008.5.1.4.1.1.7	Transfer
Comprehensive SR	1.2.840.10008.5.1.4.1.1.88.33	Transfer
Storage Commitment AE		
Storage Commitment Push Model	1.2.840.10008.1.20.1	Transfer
Query AE		
Study Root Query/Retrieve Information Model - FIND	1.2.840.10008.5.1.4.1.2.2.1	Query / Retrieve
Retrieve AE		
Study Root Query/Retrieve Information Model - MOVE	1.2.840.10008.5.1.4.1.2.2.2	Query / Retrieve
Worklist AE		
Modality Worklist	1.2.840.10008.5.1.4.31	Workflow Management

SOP Class Name	SOP Class UID	Category
MPPS AE		
Modality Performed Procedure Step	1.2.840.10008. 3.1.2.3.3	Workflow Management
Print AE		
Basic Grayscale Print Management Meta SOP Class	1.2.840.10008.5.1.1.9	Print Management
Basic Color Print Management Meta SOP Class	1.2.840.10008.5.1.1.18	Print Management
Basic Grayscale Image Box SOP Class	1.2.840.10008.5.1.1.4	Print Management
Basic Color Image Box SOP Class	1.2.840.10008.5.1.1.4.1	Print Management
Print Job SOP Class	1.2.840.10008.5.1.1.14	Print Management

Media Storage Application Profile	Write Files (FSC or FSU)	Read Files (FSR)
DVD—Recordable		
STD-US-ID-SF-DVD STD-US-ID-MF-DVD	Yes	Yes
STD-US-SC-SF-DVD STD-US-SC-MF-DVD	Yes	No
Compact Disk—Recordable		
STD-US-ID-SF-CDR STD-US-ID-MF-CDR	Yes	Yes
STD-US-SC-SF-CDR STD-US-SC-MF-CDR	Yes	No

2 TABLE OF CONTENTS

1 CONFORMANCE STATEMENT OVERVIEW 2
2 TABLE OF CONTENTS 5
LIST OF FIGURES 9
3 INTRODUCTION 10
3.1 Revision History 10
3.2 Audience 10
3.3 Remarks 10
3.4 Terms and Definitions 10
3.5 Basics of DICOM Communication 12
3.6 Abbreviations 13
3.7 References 13
4 NETWORKING 14
4.1 Implementation Model 14
4.1.1 Application Data Flow 14
4.1.1.1 Verification 15
4.1.1.2 DICOM Store 16
4.1.1.3 Storage Commitment 17
4.1.1.4 Modality Worklist 17
4.1.1.5 Modality Performed Procedure Step 19
4.1.1.6 Query / Retrieve 19
4.1.1.7 DICOM Print 20
4.1.1.8 Removable Media Storage 21
4.1.2 Functional Description of AEs 21
4.1.2.1 Verification Real-World Activities 21
4.1.2.2 Store Real-World Activities 21
4.1.2.3 Storage Commitment – Push Model Real-World Activities 21
4.1.2.4 Modality Worklist Real-World Activities 22
4.1.2.5 Modality Performed Procedure Step Real-World Activities 22
4.1.2.6 Query / Retrieve Real-World Activities 22
4.1.2.7 Print Real-World Activities 22
4.1.2.8 Removable Media Storage Real-World Activities 22
4.1.3 Sequencing of Real-World Activities 23
4.2 AE Specifications 25
4.2.1 SOP Classes 25
4.2.2 Association Establishment Policies 25
4.2.2.1 General 25
4.2.2.2 Association Establishment Order 25
4.2.2.3 Asynchronous Nature 26
4.2.2.4 Implementation Identifying Information 26
4.2.3 Association Initiation by Real-World Activities 26
4.2.3.1 Real World Activity – Verification 26
4.2.3.2 Real World Activity – Store 26
4.2.3.3 Real-World Activity – Storage Commitment 58
4.2.3.4 Real World Activity – Modality Worklist 59
4.2.3.5 Real World Activity – Modality Performed Procedure Step 61

4.2.3.6 Real World Activity – Query / Retrieve 65
4.2.3.7 Real World Activity – Print 69
5 REMOVABLE MEDIA INTERCHANGE SPECIFICATIONS 74
5.1 Supported Application Profiles 74
5.2 Supported SOP Classes 74
5.2.1 Supported SOP Classes and Transfer Syntaxes 74
5.3 Information Object Definition and DICOMDIR Keys 74
5.3.1 DICOM File Meta Information 74
5.3.2 Basic Directory Information Object Definitions – File-set Identification Module 76
5.3.3 Basic Directory Information Object Definitions – Directory Identification Module 76
5.3.4 Physical Storage Media and Media Formats 76
6 COMMUNICATION PROFILES 77
6.1 TCP/IP Stack Supported 77
6.2 Physical Media Supported 77
6.3 Chapter Extensions/Specializations/Privatizations 77
7 CONFIGURATION 78
7.1 General System Configuration 78
7.1.1 Hospital Name 78
7.2 DICOM Network Configuration 78
7.2.1 Local 78
7.2.2 Remote 78
7.2.2.1 DICOM Store Configuration 79
7.2.2.2 DICOM Storage Commitment Configuration 79
7.2.2.3 DICOM Modality Worklist Configuration 79
7.2.2.4 DICOM Modality Performed Procedure Step Configuration 79
7.2.2.5 DICOM Query / Retrieve 80
7.2.2.6 DICOM Print Configuration 80
7.3 External Equipment Configuration 82
7.4 Support of Extended Character Sets 82
8 SECURITY 82
8.1 Security Profiles 82
8.2 Association Level Security 82
8.3 Application Level Security 82
8.4 Virus Protection 82
9 APPENDICES 83
9.1 Appendix A: OB-GYN Structured Report Measurements 83
9.1.1 Patient Characteristics 83
9.1.2 OB-GYN Procedure Summary 84
9.1.3 Fetus Summary 84
9.1.4 Fetal Biometry Ratios 86
9.1.5 Fetal Biometry 87
9.1.6 Fetal Long Bones 90
9.1.7 Fetal Cranium 91

9.1.8 Fetal Biophysical Profile ... 92
9.1.9 Early Gestation ... 92
9.1.10 Amniotic Sac ... 94
9.1.11 Pelvis and Uterus ... 94
9.1.12 Ovaries ... 94
9.1.13 Follicles ... 95
9.1.14 Embryonic Vascular Structure ... 96
9.1.15 Pelvic Vascular Structure ... 96
9.2 Appendix B: Vascular Structured Report ... 98
9.2.1 Patient Characteristics ... 99
9.2.2 Blood Vessel of Head (Left Intracranial Cerebral Vessels) ... 99
9.2.3 Blood Vessel of Head (Right Intracranial Cerebral Vessels) ... 100
9.2.4 Blood Vessel of Head (Unilateral Intracranial Cerebral Vessels) ... 101
9.2.5 Artery of Neck (Left Extracranial Arteries, Carotid Ratios) ... 101
9.2.6 Artery of Neck (Right Extracranial Arteries, Carotid Ratios) ... 102
9.2.7 Artery of Lower Extremity (Left Side) ... 103
9.2.8 Artery of Lower Extremity (Right Side) ... 104
9.3 Appendix C: Adult Echocardiography Structured Report ... 105
9.3.1 Patient Characteristics ... 105
9.3.2 Left Ventricle ... 105
9.3.3 Right Ventricle ... 125
9.3.4 Left Atrium ... 127
9.3.5 Right Atrium ... 129
9.3.6 Aortic Valve ... 130
9.3.7 Mitral Valve ... 132
9.3.8 Pulmonary Valve ... 135
9.3.9 Tricuspid Valve ... 136
9.3.10 Aorta ... 137
9.3.11 Pulmonary Artery ... 137
9.3.12 Pulmonary Venous Structure ... 138
9.3.13 Cardiac Shunt Study ... 138

LIST OF TABLES

Table 1: Network Services 2
Table 2: UID Values 3
Table 3: MEDIA Services 4
Table 4: Supported SOP Classes 25
Table 5: Verification Presentation Context 26
Table 6: Store Presentation Context 27
Table 7: Supported SOP Classes 28
Table 8: Ultrasound Image and Ultrasound Retired Image IOD Attributes 28
Table 9: Ultrasound MultiFrame and Ultrasound MultiFrame Retired Image IOD Attributes 34
Table 10: Ultrasound MultiFrame IOD Attributes – 3D Volumetric Data 40
Table 11: 3D Bookmark Data 46
Table 12: Secondary Capture Image IOD Attributes 51
Table 13: Comprehensive SR IOD Attributes 55
Table 14: C-STORE Status Responses 57
Table 15: Storage Commitment Presentation Context 58
Table 16: Supported SOP Class 59
Table 17: Storage Commitment Request Attributes in N-ACTION REQUEST 59
Table 18: Worklist Presentation Context 59
Table 19: Worklist Supported SOP Classes 59
Table 20: Modality Worklist Information Model Attributes 59
Table 21: MPPS Presentation Context 61
Table 22: Supported SOP Class 62
Table 23: Modality Performed Procedure Step Attributes in N-CREATE 62
Table 24: Modality Performed Procedure Step Attributes in N-SET 64
Table 25: Query C-FIND Presentation Context 65
Table 26: Query C-FIND Search Keys 65
Table 27: Query C-FIND Status Responses 68
Table 28: Retrieve C-MOVE Presentation Context 69
Table 29: Retrieve C-MOVE Status Responses 69
Table 30: Grayscale Print Presentation Context 70
Table 31: Conformance to Grayscale Print Meta SOP Class 70
Table 32: Supported DIMSE Services for Basic Film Session SOP Class 70
Table 33: Supported DIMSE Services for Basic Film Box SOP Class 71
Table 34: Attributes set for the Basic Film Box SOP Class 71
Table 35: Supported DIMSE Services for the Basic Grayscale Image Box SOP 72
Table 36: Attributes set for the Basic Grayscale Image Box SOP Class 72
Table 37: Supported DIMSE Services for the Printer SOP 72
Table 38: Supported Printer SOP Class Element 72
Table 39: Color Print Server Presentation Context 72
Table 40: Conformance to Color Print Meta SOP Class 73
Table 41: Supported DIMSE Services for the Basic Color Image Box SOP Class 73
Table 42: Attributes set for the Basic Color Image Box SOP Class 73
Table 43: Supported Error Codes for Printer Classes 73
Table 44: Application Profiles, Real-World Activities, and Roles 74
Table 45: Transfer Syntaxes for Media Interchange 74
Table 46: US Image Attributes Used 74
Table 47: USMF Image Attributes Used 75
Table 48: Comprehensive SR Attributes Used 75
Table 49: Private Attributes 77
Table 50: User-Configurable Printer Parameters 80

LIST OF FIGURES

Figure 1. Implementation Model 15
Figure 2. Verification Model 16
Figure 3. Store Model 17
Figure 4. Storage Commitment Model 17
Figure 5. Modality Worklist Model 18
Figure 6. MPPS Model 19
Figure 7. Query / Retrieve Model 20
Figure 8. Print Model 21
Figure 9. Sequence Diagram for Real-World Activities 24

3 INTRODUCTION

This document describes the conformance to the ACR-NEMA DICOM 3.0 Standard by the ACUSON X Family Ultrasound System software from Siemens Medical Solutions USA, Inc. Ultrasound Division. It shall establish the conformance specifications for this system only, and does not apply to other products offered by Siemens Medical Solutions USA, Inc., or its affiliates.

The ACUSON X Family Ultrasound System is a device that generates ultrasound images and structured reports that can be sent using DICOM standard protocols and definitions to other DICOM compliant devices that support SOP classes as defined in Table 4: in this document.

3.1 Revision History

Revision Date	Applicable Product Releases	
	ACUSON X600	**ACUSON X700**
November 2012	N/A	1.0/1.1
September 2014	VA10	VB20

3.2 Audience

This document is written for the people that need to understand how the ACUSON X Family Ultrasound System will integrate into their healthcare facility. This includes both those responsible for overall imaging network policy and architecture, as well as integratorswho need to have a detailed understanding of the DICOM features of the product. This document contains some basic DICOM definitions so that any reader may understand how this product implements DICOM features. However, integrators are expected to fully understand all the DICOM terminology, how the tables in this document relate to the product's functionality, and how that functionality integrates with other devices that support compatible DICOM features.

3.3 Remarks

The scope of this DICOM Conformance Statement is to facilitate integration between the X Family Ultrasound System and other DICOM products. The Conformance Statement should be read and understood in conjuntion with the DICOM Standard. DICOM by itself does not guarantee interoperability. The Conformance Statement does, however, facilitate a first-level comparison for interoperability between different applications supporting compatible DICOM functionality.

This Conformance Statement is not supposed to replace validation with other DICOM equipment to ensure proper exchange of intended information. In fact, the user should be aware of the following important issues:

- The comparison of different Conformance Statements is just the first step towards assessing interconnectivity and interoperability between the product and other DICOM conformant equipment.
- Test procedures should be defined and executed to validate the required level of interoperability with specific compatible DICOM equipment, as established by the healthcare facility.

3.4 Terms and Definitions

Informal definitions are provided for the following terms used in this Conformance Statement. The DICOM Standard is the authoritative source for formal definitions of these terms.

Abstract Syntax – the information agreed to be exchanged between applications, generally equivalent to a Service/Object Pair (SOP) Class. Examples: Verification SOP Class, Modality Worklist Information Model Find SOP Class, Computed Radiography Image Storage SOP Class.

Application Entity (AE) – an end point of a DICOM information exchange, including the DICOM network or media interface software; i.e., the software that sends or receives DICOM information objects or messages. A single device may have multiple Application Entities.

Application Entity Title – the externally known name of an *Application Entity*, used to identify a DICOM application to other DICOM applications on the network.

Application Context – the specification of the type of communication used between *Application Entities*. Example: DICOM network protocol.

Association – a network communication channel set up between *Application Entities*.

Attribute – a unit of information in an object definition; a data element identified by a *tag*. The information may be a complex data structure (Sequence), itself composed of lower level data elements. Examples: Patient ID (0010,0020), Accession Number (0008,0050), Photometric Interpretation (0028,0004), Procedure Code Sequence (0008,1032).

Information Object Definition (IOD) – the specified set of *Attributes* that comprise a type of data object; does not represent a specific instance of the data object, but rather a class of similar data objects that have the same properties. The *Attributes* may be specified as Mandatory (Type 1), Required but possibly unknown (Type 2), or Optional (Type 3), and there may be conditions associated with the use of an Attribute (Types 1C and 2C). Examples: MR Image IOD, CT Image IOD, Print Job IOD.

Joint Photographic Experts Group (JPEG) – a set of standardized image compression techniques, available for use by DICOM applications.

Media Application Profile – the specification of DICOM information objects and encoding exchanged on removable media (e.g., CDs)

Module – a set of *Attributes* within an *Information Object Definition* that are logically related to each other. Example: Patient Module includes Patient Name, Patient ID, Patient Birth Date, and Patient Sex.

Negotiation – first phase of *Association* establishment that allows *Application Entities* to agree on the types of data to be exchanged and how that data will be encoded.

Presentation Context – the set of DICOM network services used over an *Association*, as negotiated between *Application Entities*; includes *Abstract Syntaxes* and *Transfer Syntaxes*.

Protocol Data Unit (PDU) – a packet (piece) of a DICOM message sent across the network. Devices must specify the maximum size packet they can receive for DICOM messages.

Security Profile – a set of mechanisms, such as encryption, user authentication, or digital signatures, used by an *Application Entity* to ensure confidentiality, integrity, and/or availability of exchanged DICOM data

Service Class Provider (SCP) – role of an *Application Entity* that provides a DICOM network service; typically, a server that performs operations requested by another *Application Entity* (*Service Class User*). Examples: Picture Archiving and Communication System (image storage SCP, and image query/retrieve SCP), Radiology Information System (modality worklist SCP).

Service Class User (SCU) – role of an *Application Entity* that uses a DICOM network service; typically, a client. Examples: imaging modality (image storage SCU, and modality worklist SCU), imaging workstation (image query/retrieve SCU)

Service/Object Pair (SOP) Class – the specification of the network or media transfer (service) of a particular type of data (object); the fundamental unit of DICOM interoperability specification. Examples: Ultrasound Image Storage Service, Basic Grayscale Print Management.

Service/Object Pair (SOP) Instance – an information object; a specific occurrence of information exchanged in a *SOP Class*. Examples: a specific x-ray image.

Tag – a 32-bit identifier for a data element, represented as a pair of four digit hexadecimal numbers, the "group" and the "element". If the "group" number is odd, the tag is for a private (manufacturer-specific) data element. Examples: (0010,0020) [Patient ID], (07FE,0010) [Pixel Data], (0019,0210) [private data element]

Transfer Syntax – the encoding used for exchange of DICOM information objects and messages. Examples: *JPEG* compressed (images), little endian explicit value representation.

Unique Identifier (UID) – a globally unique "dotted decimal" string that identifies a specific object or a class of objects; an ISO-8824 Object Identifier. Examples: Study Instance UID, SOP Class UID, SOP Instance UID.

Value Representation (VR) – the format type of an individual DICOM data element, such as text, an integer, a person's name, or a code. DICOM information objects can be transmitted with either explicit identification of the type of each data element (Explicit VR), or without explicit identification (Implicit VR); with Implicit VR, the receiving application must use a DICOM data dictionary to look up the format of each data element.

3.5 Basics of DICOM Communication

This section describes terminology used in this Conformance Statement for the non-specialist. The key terms used in the Conformance Statement are highlighted in *italics* below. This section is not a substitute for training about DICOM, and it makes many simplifications about the meanings of DICOM terms.

Two *Application Entities* (devices) that want to communicate with each other over a network using DICOM protocol must first agree on several things during an intial network "handshake". One of the two devices must initiate an *Association* (a connection to the other device), and ask if specific services, information, and encoding can be supported by the other device (*Negotiation*).

DICOM specifes a number of network services and types of information objects, each of which is called an *Abstract Syntax* for the Negotiation. DICOM also specifes a variety of methods for encoding data, denoted *Transfer Syntaxes*. The Negotiation allows the initiating Application Entity to propose combinations of Abstract Syntax and Transfer Syntax to be used on the Association; these combinations are called *Presentation Contexts.* The receiving Application Entity accepts the Presentation Contexts it supports.

For each Presentation Context, the Association Negotiation also allows the devices to agree on *Roles* – which one is the *Service Class User* (SCU - client) and which is the *Service Class Provider* (SCP - server). Normally the device initiating the connection is the SCU, i.e., the client system calls the server, but not always.

The Association Negotiation finally enables exchange of maximum network packet (*PDU*) size, security information, and network service options (called *Extended Negotiation* information).

The Application Entities, having negotiated the Association parameters, may now commence exchanging data. Common data exchanges include queries for worklists and lists of stored images, transfer of image objects and analyses (structured reports), and sending images to film printers. Each exchangeable unit of data is formatted by the sender in accordance with the appropriate *Information Object Definition*, and sent using the negotiated Transfer Syntax. There is a Default Transfer Syntax that all systems must accept, but it may not be the most efficient for some use cases. Each transfer is explicitly acknowledged by the receiver with a *Response Status* indicating success, failure, or that query or retrieve operations are still in process.

Two Application Entities may also communicate with each other by exchanging media (such as a CD-R). Since there is no Association Negotiation possible, they both use a *Media Application Profile* that specifies "pre-negotiated" exchange media format, Abstract Syntax, and Transfer Syntax.

3.6 Abbreviations

AE	Application Entity
AET	Application Entity Title
CD-R	Compact Disk Recordable
DICOM	Digital Imaging and Communications in Medicine
FSC	File-Set Creator
FSU	File-Set Updater
FSR	File-Set Reader
IHE	Integrating the Healthcare Enterprise
IOD	Information Object Definition
ISO	International Organization for Standards
JPEG	Joint Photographic Experts Group
LUT	Look-up Table
MPPS	Modality Performed Procedure Step
MSPS	Modality Scheduled Procedure Step
MWL	Modality Worklist
O	Optional (Key Attribute)
PACS	Picture Archiving and Communication System
PDU	Protocol Data Unit
R	Required (Key Attribute)
SC	Secondary Capture
SCP	Service Class Provider
SCU	Service Class User
SOP	Service-Object Pair
SPS	Scheduled Procedure Step
SR	Structured Reporting
TCP/IP	Transmission Control Protocol/Internet Protocol
U	Unique (Key Attribute)
US	Ultrasound
VR	Value Representation

3.7 References

NEMA PS3 Digital Imaging and Communications in Medicine (DICOM) Standard, available free at http://medical.nema.org/

4 NETWORKING

This section contains the ACUSON X Family system networking related services.

4.1 Implementation Model

X Family Ultrasound System users can store images directly on the system hard drive. Images can also be transferred to DICOM workstations and archive servers on a network. Storage Commitment can be used to insure that patient images and data are safely committed. Measurements from exams can be exported as DICOM SR Objects. The system is capable of printing images and reports. Performed procedure status and other procedure information can be returned to the HIS/ RIS using Modality Performed Procedure Step (MPPS).

4.1.1 Application Data Flow

Figure 1 provides a functional overview of the X Family Ultrasound System's Application Entities (AE). Relationships are shown between user-invoked activities (in the circles at the left of the AEs) and the associated real-world activities provided by DICOM service providers (in the circles at the right of the AEs).

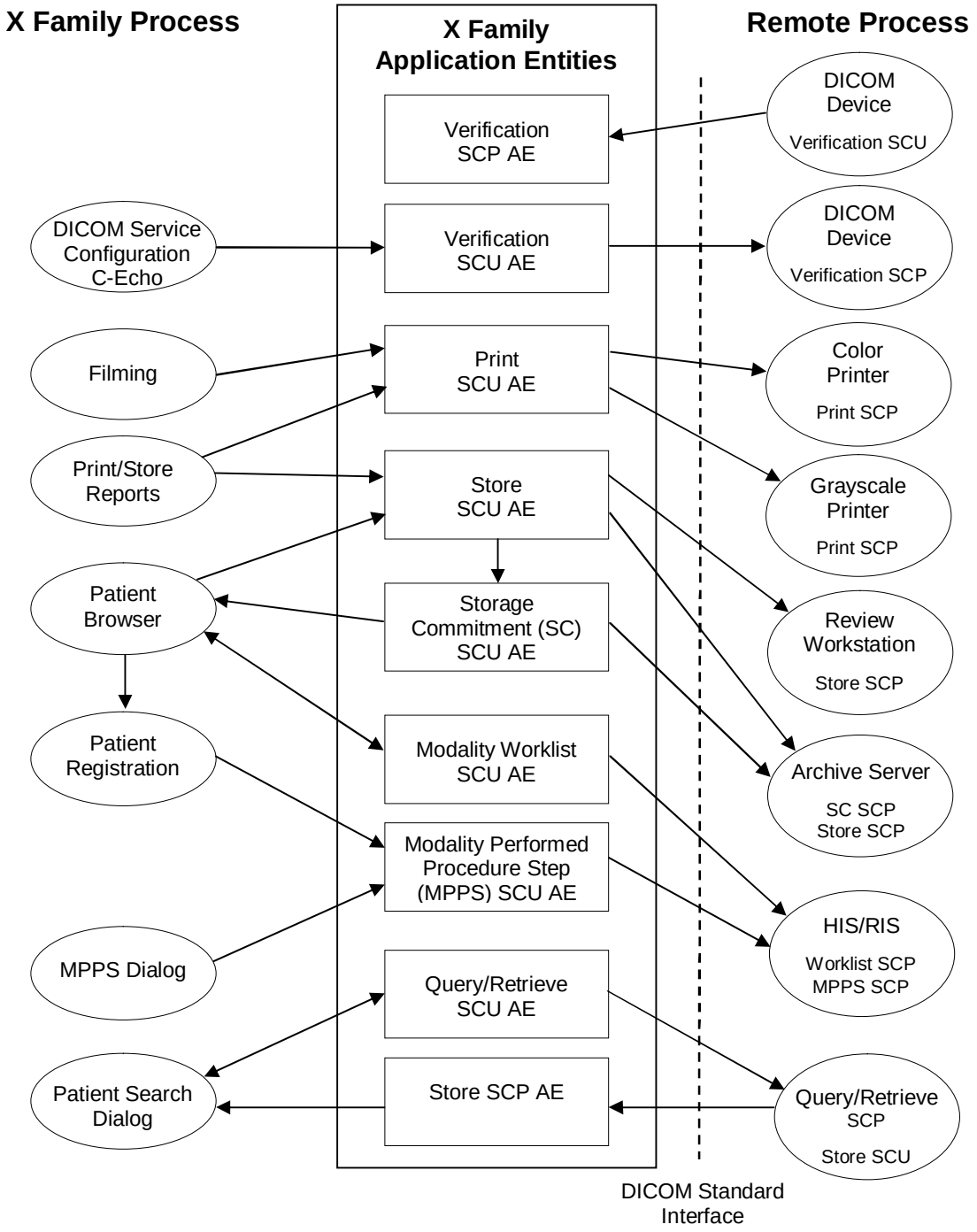


Figure 1. Implementation Model

4.1.1.1 Verification

Verification is a part of the DICOM configuration located on the 'DICOM' page of the System Presets. Verification can be used to send a DICOM Verification request to a remote Application Entity (AE) and listen for a response.

When used as a diagnostic tool, Verification returns the following messages to the user:

- If the verification succeeds: “DICOM - Successfully contacted system”.
- If the verification fails: “DICOM - Unable to communicate with system”.

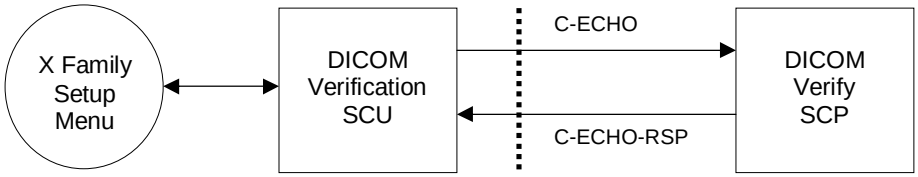


Figure 2. Verification Model

4.1.1.2 DICOM Store

When requested, the ACUSON X Family system sends images and/or structured reports to the preconfigured DICOM Storage server.

DICOM Store can be seen as two sub-operations:

- Queueing images and/or structured reports for transfer.
- Transferring images and/or structured reports to the storage server.

Queuing images and structured reports for transfer:

ACUSON X Family systems can be configured to automatically queue up images and structured reports for transfer as they are being created. “AutoStore to DICOM” option in DICOM presets has to be set for this.

Alternatively, user can select exams or individual images and manually queue them up from Review mode. When an exam is selected for DICOM store all images and structured reports (generally zero or one) will be queued. Structured reports can’t be selected individually for store, the entire exam must be stored.

Transfer of images and structured reports to the storage server:

Further, once images and/or structured reports are queued they may be immediately transferred or delayed till the end of study using the transfer storage configuration.

ACUSON X Family systems support two storage configurations: “Store At End of Exam” and “Store During Exam”.

If the storage configuration is set to “Store At End of Exam” transfer attempts begin when the user selects “Close Study” or “New Patient”.

If the storage configuration is set to “Store during Exam”, transfer attempts to destination devices begin immediately after they are queued.

For both “Store At End of Exam” and “Store During Exam” settings, image and/or structured report transfer will be delayed if the ACUSON X Family system is busy performing another DICOM Store operation.

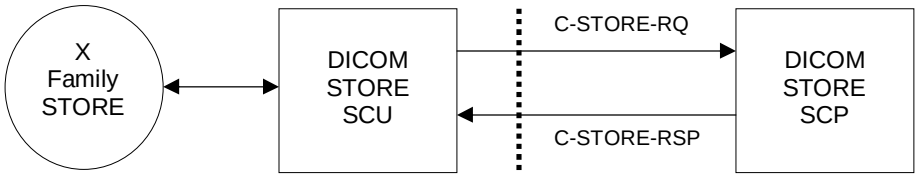


Figure 3. Store Model

4.1.1.3 Storage Commitment

The user can exercise the Storage Commitment option by configuring and selecting a Storage Commitment server from the DICOM Presets menu. The ACUSON X Family system requests commitment of images and structured reports (if any exist) and upon successful acknowledgment from the Storage server marks the study on the system hard drive as ‘Archived’.

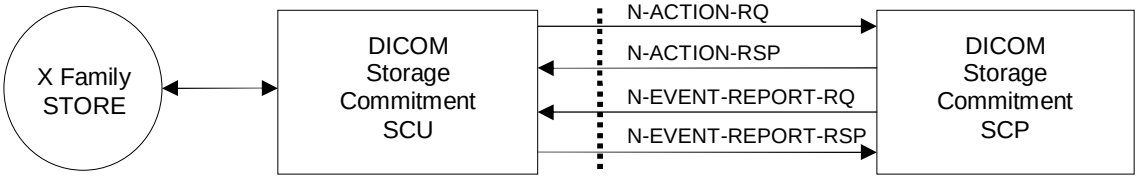


Figure 4. Storage Commitment Model

4.1.1.4 Modality Worklist

Patient registration can be automated by using the 'Worklist' Real World Activity. Pressing the 'New Patient' key on the keyboard initiates the patient data registration process and closes the previous active study. Pressing the 'Worklist' button on the patient data display screen invokes the Worklist query screen. The Worklist query screen can also be initiated from the Study screen.

Pressing the 'Search' button will attempt to find all matching patient data using the information entered on the Worklist Query screen. Patient name fields that are partially filled or empty will be treated as though an implicit wildcard was appended at the end of each field. Patient ID, Requested Procedure ID and Accession number will be exact match only. If no matches are found, a message will be presented to the operator indicating so. If more that one matching patient is found, a pick list of patient procedures will be presented to the user to select from. Each of the fields will be sortable in ascending and descending order.

The pick list of patient procedures will be limited to a number of preset entries. If more than this number of matching records are found in the query, the search will terminate and the user will be notified. The search list criteria will contain:

- Patient name
- Patient ID
- Accession number
- Exam start date/time range
- Requested Procedure ID
- US/All modalities
- Scheduled station AE title

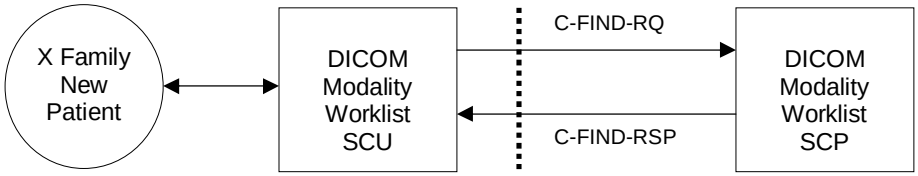


Figure 5. Modality Worklist Model

Once a Worklist query is initiated, a “Retrieving worklist, please wait ...” dialog will be presented to the user. The user will only have one option, “Cancel,” which will abort the query operation.

The following data fields in Modality Worklist Screen are initially populated from the New Patient Screen, if filled in, and can be used for query:

Attribute Name	Tag
Patient’s Full Name	(0010,0010)
Patient ID	(0010,0020)
Accession Number	(0008,0050)

The following data fields will be populated on the worklist screen for each return:

Attribute Name	Tag
Patient’s Full Name	(0010,0010)
Patient ID	(0010,0020)
Accession Number	(0008,0050)
Exam Start Date/Time	(0040,0002), (0040,0003)
Scheduled Procedure Step Sequence	(0040,0100)*
>Scheduled Procedure Step Description	(0040,0007)
>Scheduled Protocol Code Sequence	(0040,0008)
>>Code Value	(0008,0100)
Requested Procedure Description	(0032,1060)
Exam Type	(0008,1030)**
*<code1>, …,<codeN>: <sched1>,…,<schedn> where: code<i> = Sequence item code value(0008,0100) for a given sequence or value multiplicity sched<i> = Scheduled procedure step(0040,0007) for a given sequence or value multiplicity	
**if a value exists for (0008,1030). Otherwise, Exam Type is set to value of Scheduled procedure step (0040,0007). If (0040,0007) is also empty, Exam Type is set to Requested procedure Description (0032,1060) if it exists.	

The user will have the option to select a patient procedure step, or cancel the operation. Selection of a procedure step from the list will cause demographic information for the patient to be loaded in to the patient data fields.

The following data fields will be populated on the patient data screen:

Attribute Name	Tag
Patient Name (first,middle,last)	(0010,0010)
Patient ID	(0010,0020)
Accession number	(0008,0050)
Exam start date/time	(0040,0002), (0040,0003)
DOB	(0010,0030)
Sex	(0010,0040)
Weight	(0010,1030)
Height	(0010,1020)
Physician	(0008,0090)
Indication	(0080,1080)
LMP	(0010,21D0)

4.1.1.5 Modality Performed Procedure Step

The ACUSON X Family system supports reporting of Modality Performed Procedure Step (MPPS) orders when the patient registration process utilizes the 'Worklist' Real World Activity. Procedure steps are presented to the operator after successful query of a server that supports the MPPS option. A detail window allows the operator access to individual scheduled procedure steps. Pressing the 'Procedures' push button on the Patient browser Screen actualizes the detail window when multiple procedure steps are listed for the patient.

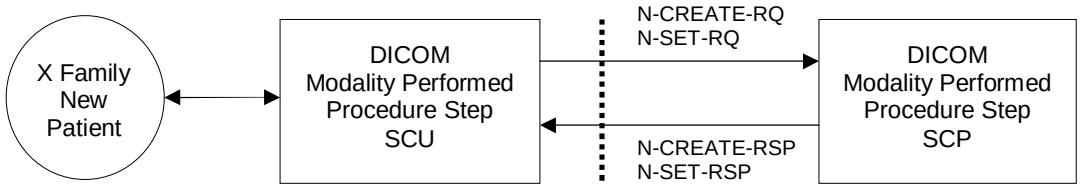


Figure 6. MPPS Model

4.1.1.6 Query / Retrieve

The query/retrieve service class defines an application-level class of services which facilitates the management of images and patient data against the well-defined information model of DICOM and allows a DICOM AE to retrieve images from a remote DICOM node or to request a remote DICOM AE to initiate a transfer of images to another DICOM AE. The ACUSON X Family system DICOM query/retrieve application supports the query/retrieve services to act as SCU.

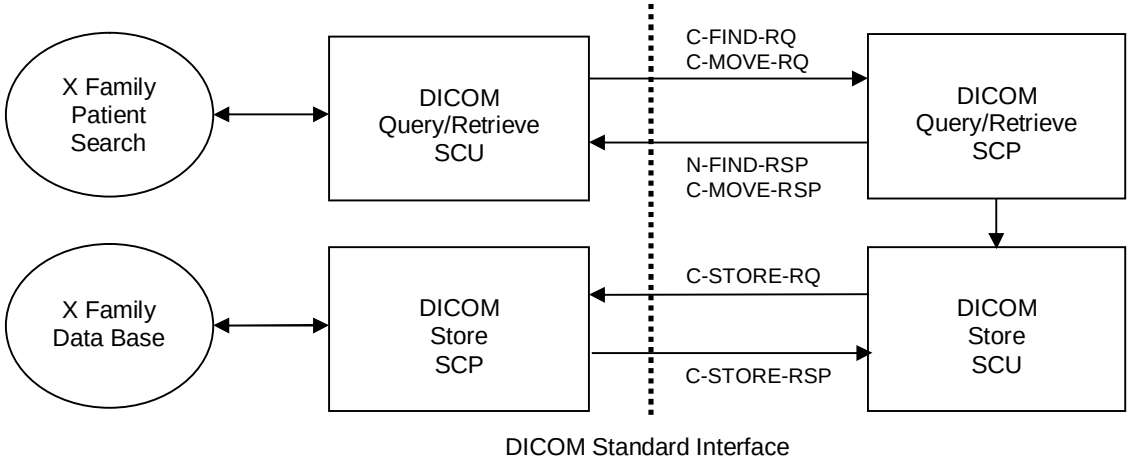


Figure 7. Query / Retrieve Model

4.1.1.7 DICOM Print

ACUSON X Family system is capable of grayscale (B/W) and color printing.

When requested, single frame images will be printed to a pre-configured DICOM network printer.

DICOM Print can be seen as two sub-operations:

- paging images for transfer
- transferring pages to printer

Paging images for transfer:

ACUSON X Family systems can be configured to automatically queue up images to be printed on B/W Printer and/or Color printer as they are being created.

Alternatively, user can select exams or individual images and manually queue them up from Review mode for print.

Every image queued up is added into a page in the respective printer layout (DICOM B/W Printer Layout or DICOM Color Printer Layout).

Transfer of pages to the Printer:

Further, pages may be immediately transferred to the printer or delayed until the end of study based on the transfer configuration.

ACUSON X Family systems support two configurations: “Print At End of Exam” and “Print When Page Full”.

If the configuration is set to “Print At End of Exam,” transfer attempts of all pages to the destination DICOM printer begin as a batch when the user ends the exam.

If the configuration is set to “Print When Page Full”, transfer attempt of a page to the destination DICOM printer begins as soon as it becomes full.

For both “Print At End of Exam” and “Print when page full” settings, page transfer will be delayed if the ACUSON X Family system is busy performing another DICOM Print operation.

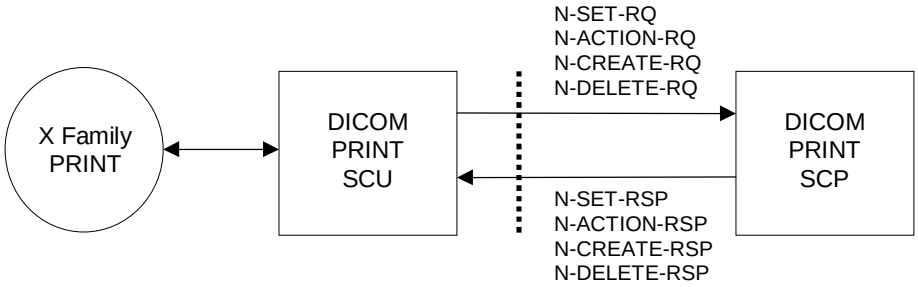


Figure 8. Print Model

4.1.1.8 Removable Media Storage

The ACUSON X Family system can perform DICOM operations to its standard on-board 120mm CD/DVD disk drive.

The ACUSON X Family system performs the File Set Creator and File Set Reader Roles for CD and DVD disks. The File Set Reader functionality does not support import of DICOM Structured Reports or measurements of imported images. Both limitations are overcome when DICOM and TIFF/AVI format is exported to CD/DVD. A DICOM conforming CD/DVD media is created when the user saves studies in DICOM format to the CD/DVD. A DICOM 3.0 conforming DICOMDIR file is created together with the directory structures, image files and structured reports (if any exist).

4.1.2 Functional Description of AEs

4.1.2.1 Verification Real-World Activities

The ACUSON X Family Verification AE performs Verification Service Class as an SCU and SCP allowing the operator to verify the ability of an application on a remote device to receive DICOM messages and allowing the operator of a remote DICOM device to verify the ACUSON X Family system's ability to receive DICOM messages. (C-ECHO DIMSE)

4.1.2.2 Store Real-World Activities

The ACUSON X Family Store AE performs all of the functions to transmit ultrasound images, structured reports and associated data to network servers or workstations. The ACUSON X Family Store AE supports the Ultrasound Image, Ultrasound Multi-Frame Image, Ultrasound Image (Retired), Ultrasound Multi-Frame (Retired), and Secondary Capture storage SOP classes as an SCU.

The ACUSON X Family Store AE also supports Structured Reports, for Obstetric-GYN, Vascular, and Cardiac studies, using the Comprehensive SR SOP Class as an SCU.

The ACUSON X Family Store AE initiates an association for C-STORE Requests to store providers when the user invokes "DICOM Store". The association may be used to store multiple images, clips, and structured reports and is closed when no images, clips, or structured reports are available to be stored to the remote device for five seconds.

4.1.2.3 Storage Commitment – Push Model Real-World Activities

The ACUSON X Family Storage Commitment AE supports Storage Commitment Push Model SOP class to inform servers when all the store operations for a study have been completed. The Storage Commitment SCU uses the N-ACTION primitive to request safekeeping of a set of SOP Instances. The Storage Commitment SCU also processes the N-EVENT-REPORT primitives that are received from the

SCP indicating 'successful' or 'non-successful' commitment status. The N-EVENT-REPORT information is used to mark a study as being successfully archived to a DICOM SCP.

The successful commit status and archival indication on the X Family system does not ensure permanent archival of the images and Structured Reports. The operations performed by the SCP are dependent on its capabilities and configuration.

4.1.2.4 Modality Worklist Real-World Activities

The ACUSON X Family Modality Worklist AE supports the DICOM Basic Worklist Management Service as an SCU. The AE initiates an association to the active Worklist server when a Worklist query is selected (via the "Worklist" button). The association is closed upon the completion of each query. A preset maximum number of matching results is accepted, at which point, the ACUSON X Family Modality Worklist AE issues a C-CANCEL-RQ request.

4.1.2.5 Modality Performed Procedure Step Real-World Activities

The ACUSON X Family Modality Performed Procedure Step AE supports Modality Performed Procedure Step (MPPS) in the role of SCU. The ACUSON X Family system is capable of displaying scheduled procedure steps via the User Interface (UI) for Modality Performed Procedure Step. The operator can select a single PPS. The operator can notify the MPPS server that a MPPS is 'In Progress', 'Discontinued' or 'Completed'. The user is also allowed to append procedure steps to existing or previously completed procedure steps.

4.1.2.6 Query / Retrieve Real-World Activities

The query/retrieve service class defines an application-level class of services which facilitates the management of images and patient data against the well-defined information model of DICOM and allows a DICOM AE to retrieve images from a remote DICOM node or to request a remote DICOM AE to initiate a transfer of images to another DICOM AE. The ACUSON X Family DICOM query/retrieve application supports the query/retrieve services as an SCU.

The Query SCU initiates a C-FIND request to the remote SCP and is invoked directly by the user, using the query parameters entered in the Data View UI. The remote SCP returns a list of responses with defined data, which are displayed to the user. The user can decide to start retrieval or to issue another query.

The ACUSON X Family supports

- Study Root Query Model.

As the Move SCU, the system initiates a C-MOVE request to the remote Retrieve SCP. The remote Retrieve SCP in turn starts C-STORE sub-operations to the Storage SCP.

- Retrieve only <Product Name> images
- SR not supported

4.1.2.7 Print Real-World Activities

The ACUSON X Family Print AE provides all aspects of the Print Management SCU. The ACUSON X Family AE initiates an association to the printer when the user invokes "DICOM Print". The association may be used to print multiple pages and is closed when no pages are available to be printed to the remote device for five seconds.

4.1.2.8 Removable Media Storage Real-World Activities

The ACUSON X Family Store AE provides a standard implementation of DICOM Store to CD or DVD. The ACUSON X Family Store AE selects one or more studies and exports the same to CD or DVD. ACUSON X Family Store AE creates a DICOM File Format Image File for every image, clip and structured report in each of the selected studies.

A DICOMDIR file is created along with the files.

Measurements are not supported on imported images unless TIFF/AVI format is exported.

The DICOM SR cannot be imported from media unless the TIFF/AVI format is exported along with the DICOM SR.

4.1.3 Sequencing of Real-World Activities

Print, Store, Echo, Worklist, Storage Commit and MPPS commands can be transmitted simultaneously within the limits described below.

Storage Commit

The Storage Commitment command (if enabled) is sent in the following situations:

a. On series close, when all images have previously stored successfully.

b. The series is closed before all images are stored successfully, all previous stores have succeeded and the last image stores successfully.

c. The series is closed before all images are stored successfully, at least one store has succeeded, at least one store has failed and the last store with non-zero retry count fails or succeeds.

d. A series has been partially committed as in c. Later, due to "Retry Job" button press on the Store Status UI screen the store jobs are retried. Another Storage Commit is sent when at least one store has succeeded and the last store with non-zero retry count fails or succeeds.

MPPS

The MPPS command (if enabled) is sent in the following situations:

a. N-CREATE command is sent whenever a new procedure step is selected or an unscheduled procedure is created on the system. The state of the MPPS command is set to “In-Progress”.

b. N-SET command is sent when the Procedure Step is closed by the user pressing either the Completed or Discontinued button on the Close Procedure dialog. The state of the MPPS command is set, according to the state (Completed or Discontinued) set by the user.

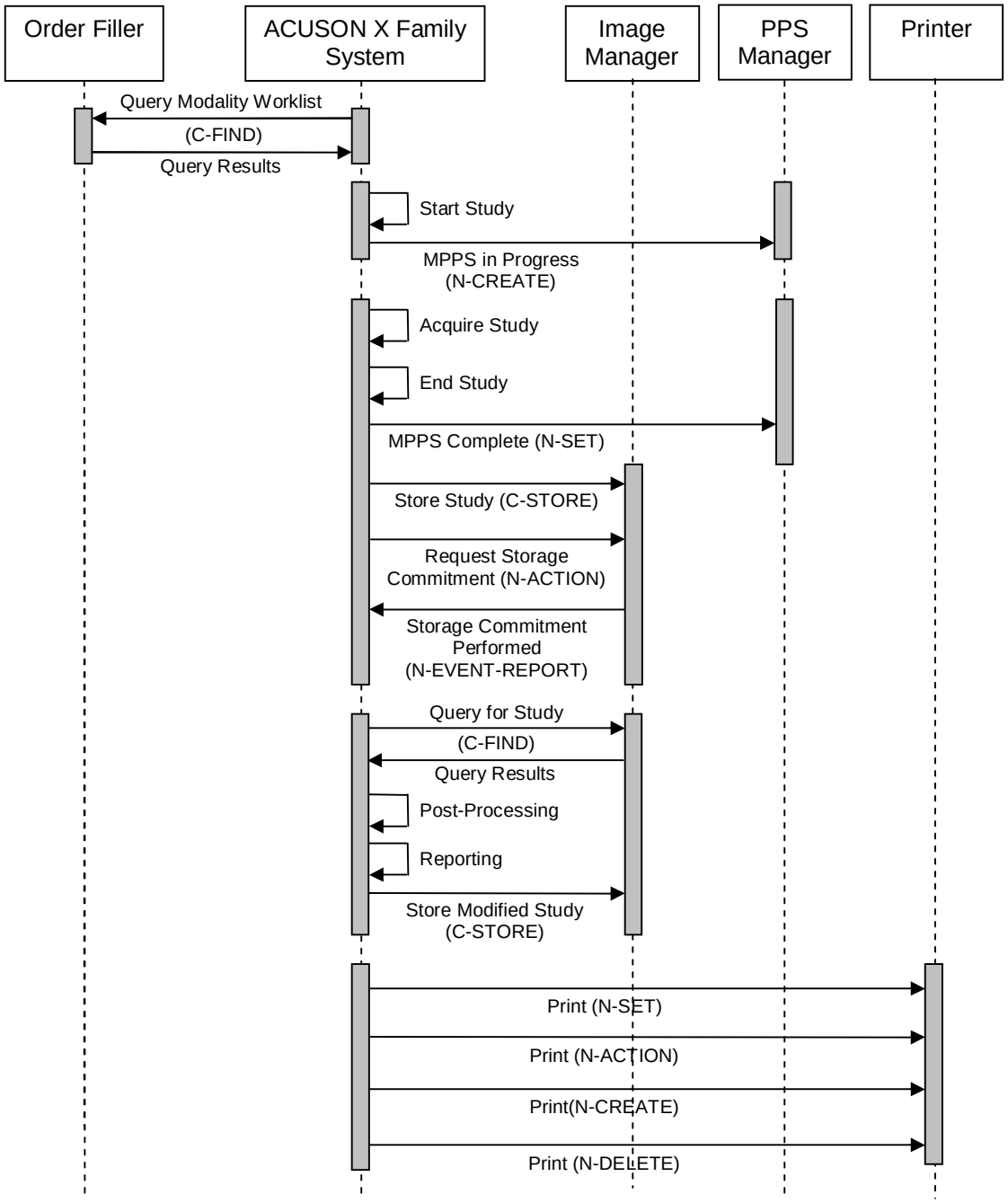


Figure 9. Sequence Diagram for Real-World Activities

4.2 AE Specifications

4.2.1 SOP Classes

The ACUSON X Family AEs provides conformance to the following DICOM Service SOP Classes as an SCU.

Service SOP Class Name	SOP Class UID
Verification	1.2.840.10008.1.1
Ultrasound Image Storage (Retired)	1.2.840.10008.5.1.4.1.1.6
Ultrasound Image Storage	1.2.840.10008.5.1.4.1.1.6.1
Ultrasound Multi-Frame Image Storage (Retired)	1.2.840.10008.5.1.4.1.1.3
Ultrasound Multi-Frame Image Storage	1.2.840.10008.5.1.4.1.1.3.1
Secondary Capture Image Storage	1.2.840.10008.5.1.4.1.1.7
Storage Commitment - Push Model	1.2.840.10008.1.20.1
Basic Grayscale Print Management Meta SOP Class	1.2.840.10008.5.1.1.9
Basic Color Print Management Meta SOP Class	1.2.840.10008.5.1.1.18
Basic Grayscale Image Box SOP Class	1.2.840.10008.5.1.1.4
Basic Color Image Box SOP Class	1.2.840.10008.5.1.1.4.1
Printer SOP Class	1.2.840.10008.5.1.1.16
Modality Worklist Information Model C- FIND	1.2.840.10008.5.1.4.31
Modality Performed Procedure Step	1.2.840.10008.3.1.2.3.3
Comprehensive SR	1.2.840.10008.5.1.4.1.1.88.33

4.2.2 Association Establishment Policies

4.2.2.1 General

The ACUSON X Family system utilizes TCP/IP. The Maximum Length PDU negotiation is included in all association establishment requests. The maximum length PDU offered for an association initiated by an ACUSON X Family system is:

- Maximum PDU Offered: 28672

4.2.2.2 Association Establishment Order

An ACUSON X Family system initiates each C-Store Request one at a time, one for each transfer request being processed.

Image format on an ACUSON X Family system can be set to one of “Automatic”, “Old Ultrasound”, or “Secondary Capture”.

For the “Automatic” setting, an ACUSON X Family system proposes Ultrasound Multi-Frame Image, Ultrasound Image, Ultrasound Multi-Frame Image (Retired), Ultrasound Image (Retired), Secondary Capture Image, and Comprehensive SR sequentially.

For the “Old Ultrasound” setting, an ACUSON X Family system proposes Ultrasound Multi-Frame Image (Retired), Ultrasound Image (Retired), Secondary Capture, and Comprehensive SR Image to be negotiated sequentially.

For the “Secondary Capture” setting, an ACUSON X Family system proposes Secondary Capture Image and Comprehensive SR to be negotiated sequentially.

4.2.2.3 Asynchronous Nature

All associations use the default synchronous mode of operation. Asynchronous Operations Window negotiations are not supported on the ACUSON X Family system.

4.2.2.4 Implementation Identifying Information

- Implementation Class UID: “1.3.12.2.1107.5.5.5” (See below).
- Implementation Version Name: “MergeCOM3_370”

Siemens has provided registration for all Siemens Medical Solutions Groups. This unique Class UID is defined as:

“1.3.12.2.1107.5.5.product”

Where the interpretation is:

1. = International Standards Organization (ISO)

3. = International branch of ISO

12.2.1107.5. = Assigned to Siemens-UB MED

5. = Ultrasound Modality (SMS-UG)

Product = 5 - DICOM implementation for X Family systems and older M3 systems

4.2.3 Association Initiation by Real-World Activities

4.2.3.1 Real World Activity – Verification

The ACUSON X Family system is capable of supporting Verification service class as SCU or SCP. Verification can be initiated as a singular event from the Systems Presets menu to any configured SCP that supports Verification.

Proposed Presentation Contexts – Verification

The ACUSON X Family system will propose Presentation Contexts as shown in the table below.

Abstract Syntax		Transfer Syntax		Role	Extended Negotiation
Name	UID	Name List	UID List		
Verification	1.2.840.10008.1.1	Implicit VR Little Endian	1.2.840.10008.1.2	SCU/SCP	None
Verification	1.2.840.10008.1.1	Explicit VR Little Endian	1.2.840.10008.1.2.1	SCU/SCP	None
Verification	1.2.840.10008.1.1	Explicit VR Big Endian	1.2.840.10008.1.2.2	SCU/SCP	None

4.2.3.2 Real World Activity – Store

ACUSON X Family system facilitates users to store images and structured reports as they are being created or later in review mode.

Queuing images during acquisition

“Autostore to DICOM” option in DICOM presets has to be set. One or more of “Print/Store 1”, “Print/Store 2” and “Clip Store” keys on the control panel can be configured for Store (Disk Store, Clip capture). When

the user presses one of the configured keys, an image or clip is acquired, stored on the hard disk and queued up to be transferred to the storage server. Structured reports, if any, will be stored automatically after the study is closed and each time the report is modified after study close.

Queueing images and structured reports in Review mode

User can select one or more closed studies and queue them up for Storage. The DICOM Store button is available in Patient browser for this operation. All images and structured reports (if any) are stored. The study must be closed to generate a structured report.

Transfer of images to the storage server

See section 4.1.1.2.

Associated Real World Activities

When images and/or structured reports are transferred from the hard disk to a DICOM Store SCP, the system establishes an association between the ACUSON X Family AE and the configured DICOM device. The association may be used to store multiple images and/or structured reports and is closed when no images or structured reports are available to be stored to the remote device for five seconds.

Proposed Presentation Context

The following Presentation Contexts are presented to the SCP in an A-ASSOCIATE-RQ for DIMSE C-STORE storage services. The storage services utilize C-STORE services, as defined by the DICOM Standard. The table below represents all “Store” presentation contexts.

Abstract Syntax		Transfer Syntax		Role	Extended Negotiation
Name	UID	Name List	UID List		
Ultrasound Multi-Frame Image Storage	1.2.840.10008.5.1.4.1.1.3.1	Lossy JPEG 8 Bit Image Compression	1.2.840.10008.1.2.4.50	SCU	None
Ultrasound Multi-Frame Image Storage	1.2.840.10008.5.1.4.1.1.3.1	DICOM Explicit VR Little Endian	1.2.840.10008.1.2.1	SCU	None
Ultrasound Multi-Frame Image Storage	1.2.840.10008.5.1.4.1.1.3.1	DICOM Implicit VR Little Endian	1.2.840.10008.1.2	SCU	None
Ultrasound Multi-Frame Image Storage (Retired)	1.2.840.10008.5.1.4.1.1.3	DICOM Explicit VR Little Endian	1.2.840.10008.1.2.1	SCU	None
Ultrasound Multi-Frame Image Storage (Retired)	1.2.840.10008.5.1.4.1.1.3	DICOM Implicit VR Little Endian	1.2.840.10008.1.2	SCU	None
Ultrasound Image Storage	1.2.840.10008.5.1.4.1.1.6.1	DICOM Explicit VR Little Endian	1.2.840.10008.1.2.1	SCU	None
Ultrasound Image Storage	1.2.840.10008.5.1.4.1.1.6.1	DICOM Implicit VR Little Endian	1.2.840.10008.1.2	SCU	None
Ultrasound Image Storage (Retired)	1.2.840.10008.5.1.4.1.1.6	DICOM Explicit VR Little Endian	1.2.840.10008.1.2.1	SCU	None

Abstract Syntax		Transfer Syntax		Role	Extended Negotiation
Name	UID	Name List	UID List		
Ultrasound Image Storage (Retired)	1.2.840.10008.5.1.4.1.1.6	DICOM Implicit VR Little Endian	1.2.840.10008.1.2	SCU	None
Secondary Capture Image Storage	1.2.840.10008.5.1.4.1.1.7	DICOM Explicit VR Little Endian	1.2.840.10008.1.2.1	SCU	None
Secondary Capture Image Storage	1.2.840.10008.5.1.4.1.1.7	DICOM Implicit VR Little Endian	1.2.840.10008.1.2	SCU	None
Comprehensive SR	1.2.840.10008.5.1.4.1.1.88.33	DICOM Explicit VR Little Endian	1.2.840.10008.1.2.1	SCU	None

The ACUSON X Family system always acts as an SCU for store and is the client in a client-server model.

Stress-Echo multi-frame images are only stored using Ultrasound Multi-Frame Image Storage with Lossy JPEG 8 Bit Image Compression. All other single and mullti-frame images can be stored using other SOP classes and transfer syntaxes as described above.

SOP Specific Conformance to Storage Service SOP Classes

The Store Real World Activity provides standard extended conformance as an SCU for the following standard Storage Service Class SOP:

Service SOP Class Name	SOP Class UID	Conformance Level
Ultrasound Multi-Frame Image Storage	1.2.840.10008.5.1.4.1.1.3.1	Standard Extended
Ultrasound Multi-Frame Image Storage (Retired)	1.2.840.10008.5.1.4.1.1.3	Standard Extended
Ultrasound Image Storage	1.2.840.10008.5.1.4.1.1.6.1	Standard Extended
Ultrasound Image Storage (Retired)	1.2.840.10008.5.1.4.1.1.6	Standard Extended
Secondary Capture Image Storage	1.2.840.10008.5.1.4.1.1.7	Standard Extended
Comprehensive SR	1.2.840.10008.5.1.4.1.1.88.33	Standard Extended

This is accomplished using the DIMSE C-STORE Service. The SCU issues a service request with a SOP instance that meets the requirements of the desired ultrasound, secondary capture, or structured report IOD.

The following Structured Report Templates are supported by the ACUSON X Family system:

- TID 5000 “OB-GYN Ultrasound Procedure Report”
- TID 5100 “Vascular Ultrasound Procedure Report”
- TID 5200 “Adult Echocardiography Ultrasound Procedure Report”

The following table denotes the attributes included in the Ultrasound Image Object as implemented on the ACUSON X Family system. Attributes not listed are not used.

Module	Attribute	Tag	Notes

Module	Attribute	Tag	Notes
Patient Identification	Patient's Name	(0010,0010)	Patient Data Screen – Last Name, First & Middle fields. Populated from Modality Worklist if used.
	Patient ID	(0010,0020)	Patient Data Screen – ID field. Default is today's date & time (e.g., 03_04_2003_17_54_43 = Apr. 3, 2003 at 5:54:43 PM). Populated from Modality Worklist if used.
Patient Demographic	Patient's Birth Date	(0010,0030)	Patient Data Screen – DOB field. Default is a zero length attribute. Populated from Modality Worklist if used.
	Patient's Sex	(0010,0040)	Patient Data Screen – Gender field. M = male F = female. O = Other Default is a zero length attribute. Populated from Modality Worklist if used.
	Patient's Age	(0010,1010)	Calculated from Patient Data Screen DOB field.
	Patient's Size	(0010,1020)	Patient Data Screen – Height field. Populated from Modality Worklist if used.
	Patient's Weight	(0010,1030)	Patient Data Screen – Weight field. Populated from Modality Worklist if used.
	Other Patient IDs	(0010,1000)	Populated from Worklist
Patient Study	Admitting Diagnosis Description	(0008,1080)	Patient Data Screen – Indication field. Populated from Modality Worklist if used.
General Study	Study Instance UID	(0020,000D)	Populated from Modality Worklist if used; generated by X Family systemotherwise
	Image Type	(0008,0008)	Example value: ORIGINAL\PRIMARY\TEE\0001 Value 1: ORIGINAL or DERIVED Value 2: PRIMARY or SECONDARY Value 3: Set to value by exam type Value 4: It is constructed as a modality bit map to allow for a description of multi-modality displays. In using this bit map, the sum of the values of the various modalities will unambiguously Determine the constituent modalities. 0001 = 2D Imaging 0002 = M-Mode 0004 = CW Doppler 0008 = PW Doppler

Module	Attribute	Tag	Notes
			0010 = Color Doppler 0020 = Color M-Mode 0040 = 3D Rendering 0100 = Color Power Mode
	Study Date	(0008,0020)	Date the exam started.
	Study Time	(0008,0030)	Time the exam started.
	Referring Physician's Name	(0008,0090)	Patient Data Screen – Physician field. Populated from Modality Worklist if used.
	Study ID	(0020,0010)	Generated by X Family system
	Accession Number	(0008,0050)	Patient Data Screen – Accession # field. Populated from Modality Worklist if used.
	Study Description	(0008,1030)	Populated with the first attribute from Modality Worklist that contains a valid value from the following list of attributes: Study Description (0008,1030), Scheduled Procedure Step Description (0040,0007), Requested Procedure Description (0032,1060). If Modality Worklist was not used or none of the attributes contains a valid value, QuickSet Screen – Description field is used. If Decscription field is empty, QuickSet Screen – Exam/QuickSet name is used.
General Series	Modality	(0008,0060)	Always set to “US”
	Series Instance UID	(0020,000E)	Generated by X Family system
	Series Number	(0020,0011)	Series Number in study (1-n).
	Laterality	(0020,0060)	Always sent as 0 length attribute
	[(b)]Series Date	(0008,0021)	Date the series started.
	[(b)]Series Time	(0008,0031)	Time the series started.
	[(b)]Series Description	(0008,103E)	Populated with Scheduled Procedure Step Description if a value was provided by Modality Worklist.
	[(b)]Protocol Name	(0018,1030)	The exam type of the most recent image stored in a particular series. If no images are stored for a series then the value is set to “Ultrasound”.
	[(b)]Request Attributes Sequence	(0040,0275)	Populated with Scheduled Procedure Step Sequence (0040, 0100) if provided by Modality Worklist.
	>[(b)]Scheduled Procedure Step Description	(0040,0007)	Populated with Scheduled Procedure Step Description (0040, 0007) from Scheduled Procedure Step Sequence (0040, 0100) if provided by Modality Worklist.
	>[(b)]Scheduled Protocol Code Sequence	(0040,0008)	Populated with Scheduled Protocol Code Sequence (0040, 0008) from Scheduled Procedure Step Sequence (0040, 0100) if provided by Modality Worklist.
	>Requested Procedure Description	(0032,1060)	Populated from Requested Procedure Description in MWL query

Module	Attribute	Tag	Notes
	>[(b)]Scheduled Procedure Step ID	(0040,0009)	Populated with Scheduled Procedure Step ID (0040, 0009) from Scheduled Procedure Step Sequence (0040, 0100) if provided by Modality Worklist.
	>[(b)]Requested Procedure ID	(0040,1001)	Populated with Requested Procedure ID (0040, 1001) from Scheduled Procedure Step Sequence (0040, 0100) if provided by Modality Worklist.
	[(b)]Performed Procedure Step Start Date	(0040,0244)	Date the Performed Procedure Step was started.
	[(b)]Performed Procedure Step Start Time	(0040,0245)	Time the Performed Procedure Step was started.
	[(b)]Performed Procedure Step ID	(0040,0253)	Populated with Scheduled Procedure Step ID (0040, 0009) if provided by Modality Worklist.
	[(b)]Performed Procedure Step Description	(0040,0254)	Populated with Scheduled Procedure Step Description (0040,0007) if provided by Modality Worklist.
	[(b)]Performed Procedure Protocol Code Sequence	(0040,0260)	Populated with Scheduled Protocol Code Sequence (0040,0008) if provided by Modality Worklist.
	[(b)]Comments on the Performed Procedure Step	(0040,0280)	Populated with Comments on the Scheduled Procedure Step (0040,0400) if provided by Modality Worklist.
	Referenced Performed Procedure Step Sequence	(0008,1111)	Populated with MPPS SOP Class UID and MPPS SOP instance UID of MPPS command sent for the procedure step(s) performed.
General Equipment	Manufacturer	(0008,0070)	Set to “SIEMENS”
	Station Name	(0008, 1010)	Station AE title
	Institution Name	(0008,0080)	System Presets – Organization Name field.
	Software Versions	(0018,1020)	Set to the DICOM Software Version
	Manufacturer’s Model Name	(0008,1090)	Set to “ACUSON <Product Name>”
General Image	Instance Number	(0020,0013)	Image number in study (1 – n)
	Patient Orientation	(0020,0020)	Always sent as 0 length attribute
Image Pixel	Samples per Pixel	(0028,0002)	Set to 1 for MONOCHROME2 images, 3 for RGB images.
	Photometric Interpretation	(0028,0004)	Set to “MONOCHROME2“or “RGB“
	Planar Configuration	(0028,0006)	Color by plane. Color frame pixel order is configured as a planar image. Set to 0 (color by pixel) for RGB pixel-ordered image, 1 (color by plane) for planar image. Required when Samples per Pixel has a value greater than 1.
	Rows	(0028,0010)	Set to 480 for NTSC; 547 for PAL. For post-processed images and screen captures, this value may be up to 768.

Module	Attribute	Tag	Notes
	Columns	(0028,0011)	Set to 640 for NTSC; 692 for PAL. For post-processed images and screen captures, this value may be up to 1024.
	Bits Allocated	(0028,0100)	Set to 8.
	Bits Stored	(0028,0101)	Set to 8.
	High Bit	(0028,0102)	Set to 7.
	Pixel Representation	(0028,0103)	Set to 0
	Pixel Data	(7FE0,0010)	
US Image	Heart Rate	(0018,1088)	Only provided if heart rate is > 0
	Lossy Image Compression	(0028,2110)	"00"
SOP Common	SOP Class UID	(0008,0016)	1.2.840.10008.5.1.4.1.1.6.1 or 1.2.840.10008.5.1.4.1.1.6
	SOP Instance UID	(0008,0018)	Generated by X Family system
	Specific Character Set	(0008,0005)	Set to values as defined in Section 7.4 of this document.
Image Plane	Pixel Spacing	(0028,0030)	Pixel Spacing information is only provided for single, full screen, 2D image types (2D image types are B-mode, B-mode with color, B-mode with power).
Region Calibration	(c)Sequence of Ultrasound Regions	(0018,6011)	
	>(c)Region Spatial Format	(0018,6012)	B-Mode (Tissue or Color) = 0001H M-Mode (Tissue or Color) = 0002H Spectral (CW/PW) Doppler = 0003H
	>(c)Region Data Type	(0018,6014)	B-Mode, M-Mode = 0001H (Tissue) Spectral Doppler = 0004H (CW Spectral Doppler) Spectral Doppler = 0003H (PW Spectral Doppler)
	>(c)Region Flags	(0018,6016)	1st Bit (LSB) = 1 (All images acquired are transparent) 2nd Bit = 1 (All images acquired are automatically scaled) 3rd Bit = 1 for frequency scale 3rd Bit = 0 for velocity scale. The value of the 3rd bit is undefined for any mode other than Doppler. The value for 3rd bit is undefined if both frequency and velocity scales are selected on the Doppler image. 4th Bit is Reserved and value is always 0
	>(c)Region Location Min X0	(0018,6018)	
	>(c)Region Location Min Y0	(0018,601A)	
	>(c)Region Location Max X1	(0018,601C)	
	>(c)Region Location Max Y1	(0018,601E)	
	>(c)Physical Units X direction	(0018,6024)	B-Mode (Tissue or Color) = 0003H (cm) M-Mode (Tissue or Color) = 0004H (seconds) Spectral (CW/PW) Doppler = 0004H

Module	Attribute	Tag	Notes
			(seconds)
	>[(c)]Physical Units Y direction	(0018,6026)	B-Mode (Tissue or Color) = 0003H (cm) M-Mode (Tissue or Color) = 0003H (cm) Spectral (CW/PW) Doppler = 0007H (cm/sec)
	>[(c)]Physical Delta X	(0018,602C)	
	>[(c)]Physical Delta Y	(0018,602E)	
	>[(c)]Reference Pixel X0	(0018,6020)	Attribute only set for Spectral Doppler Regions
	>[(c)]Reference Pixel Y0	(0018,6022)	Attribute only set for Spectral Doppler Regions
	>[(c)]Reference Pixel Physical Value X	(0018,6028)	Attribute only set for Spectral Doppler Regions When provided, value is always 0.
	>[(c)]Reference Pixel Physical Value Y	(0018,602A)	Attribute only set for Spectral Doppler Regions When provided, value is always 0.
Private Attributes	[(a)]Private Creator	(0011,0010)	Reserves tags 0011,1000 through 0011,10FF for use as private tags.
	[(a)]Siemens Medical Solutions Model Name	(0011,1010)	Always set to “<Product Name>”.
	[(a)]DIMAQ Software Version	(0011,1011)	Set to version of DIMAQ software installed.
	[(a)]Private Data	(0011,1020)	For internal X Family use only.
	[(a)]Private Data	(0011,1021)	For internal X Family use only.
	[(a)]Private Creator	(0013,0010)	Reserves tags 0013, 1000 through 0013, 10FF for use as private tags.
	[(a)]Siemens Medical Solutions Model Name	(0013,1010)	Always set to “<Product Name>”.
	[(a)]DIMAQ Software Version	(0013,1011)	Set to version of DIMAQ software installed.
	[(a)]Private Data	(0013,1020)	For internal X Family use only.
	[(a)]Private Creator	(0015,0010)	This group is populated only if data is available. Reserves tags 0015, 1000 through 0015, 10FF for use as private tags.
	[(a)]Siemens Medical Solutions Model Name	(0015,1010)	Always set to “<Product Name>”.
	[(a)]DIMAQ Software Version	(0015,1011)	Set to version of DIMAQ software installed.
	[(a)]Private Data	(0015,1020)	For internal X Family use only.
Private Attributes	[(a)]Private Creator	(0017,0010)	This group is populated only if data is available. Reserves tags 0017, 1000 through 0017, 10FF for use as private tags.
	[(a)]Siemens Medical Solutions Model Name	(0017,1010)	Always set to “<Product Name>”.
	[(a)]DIMAQ Software Version	(0017,1011)	Set to version of DIMAQ software

Module	Attribute	Tag	Notes
			installed.
	[(a)]Private Data	(0017,1020)	For internal X Family use only.
	Private Creator	(0019,0010)	Reserves tags 0019, 1000 through 0019, 10FF for use as private tags.
	Import Structured Reports	(0019,1020)	Set to “O” or “C” or “CO” if Obstetric or cardiac SR options was purchased and SR generation was configured. Otherwise set to “No”. Instructs SCP that it should attempt to import measurements from SR.

(a) The Attribute is only provided if the image is written to media.

(b) The Attribute is only provided if the procedure step is queried from the MWL server.

(c) Region Calibration is provided only for 2D (B-Mode), M-Mode, and Spectral Doppler Regions. Region Calibration is not supported on Ultrasound RETIRED images, Screen Captures, and post-processed images. Region Calibration is not supported for M-Mode or Spectral Doppler still images taken from Live Imaging.

Module	Attribute	Tag	Notes
Patient Identification	Patient's Name	(0010,0010)	Patient Data Screen – Last Name, First & Middle fields. Populated from Modality Worklist if used.
	Patient ID	(0010,0020)	Patient Data Screen – ID field. Default is today’s date & time (e.g., 03_04_2003_17_54_43 = Apr. 3, 2003 at 5:54:43 PM). Populated from Modality Worklist if used.
Patient Demographic	Patient's Birth Date	(0010,0030)	Patient Data Screen – DOB field. Default is a zero length attribute. Populated from Modality Worklist if used.
	Patient's Sex	(0010,0040)	Patient Data Screen – Gender field. M = male F = female. O= Other Default is a zero length attribute. Populated from Modality Worklist if used.
	Patient’s Age	(0010,1010)	Calculated from Patient Data Screen DOB field.
	Patient’s Size	(0010,1020)	Patient Data Screen – Height field. Populated from Modality Worklist if used.
	Patient’s Weight	(0010,1030)	Patient Data Screen – Weight field. Populated from Modality Worklist if used.
	Other Patient IDs	(0010,1000)	Populated from Worklist
Patient Study	Admitting Diagnosis Description	(0008,1080)	Patient Data Screen – Indication field. Populated from Modality Worklist if used.
General	Study Instance UID	(0020,000D)	Populated from Modality Worklist if used;

Module	Attribute	Tag	Notes
Study			generated by X Family system otherwise.
	Image Type	(0008,0008)	Example value: ORIGINAL\PRIMARY\TEE\0001 Value 1: ORIGINAL or DERIVED Value 2: PRIMARY or SECONDARY Value 3: Set to value by exam type Value 4: It is constructed as a modality bit map to allow for a description of multi-modality displays. In using this bit map, the sum of the values of the various modalities will unambiguously determine the constituent modalities. 0001 = 2D Imaging 0002 = M-Mode 0004 = CW Doppler 0008 = PW Doppler 0010 = Color Doppler 0020 = Color M-Mode 0040 = 3D Rendering
	Study Date	(0008,0020)	Date the exam started.
	Study Time	(0008,0030)	Time the exam started.
	Referring Physician's Name	(0008,0090)	Patient Data Screen – Physician field. Populated from Modality Worklist if used.
	Study ID	(0020,0010)	Generated by X Family system
	Accession Number	(0008,0050)	Patient Data Screen – Accession # field. Populated from Modality Worklist if used.
	Study Description	(0008,1030)	Populated with the first attribute from Modality Worklist that contains a valid value from the following list of attributes: Study Description (0008, 1030), Scheduled Procedure Step Description (0040, 0007), Requested Procedure Description (0032, 1060). If Modality Worklist was not used or none of the attributes contains a valid value, QuickSet Screen – Description field is used. If Decscription field is empty, QuickSet Screen – Exam/QuickSet name is used.
General Series	Modality	(0008,0060)	Always set to “US”
	Series Instance UID	(0020,000E)	Generated by X Family system
	Series Number	(0020,0011)	Series Number in study (1-n).
	Laterality	(0020,0060)	Always sent as 0 length attribute
	[(b)]Series Date	(0008,0021)	Date the series started.
	[(b)]Series Time	(0008,0031)	Time the series started.

Module	Attribute	Tag	Notes
	(b)Series Description	(0008,103E)	Populated with Scheduled Procedure Step Description if a value was provided by Modality Worklist.
	(b)Protocol Name	(0018,1030)	The exam type of the most recent image stored in a particular series. If no images are stored for a series then the value is set to “Ultrasound”.
	(b)Request Attributes Sequence	(0040,0275)	Populated with Scheduled Procedure Step Sequence (0040, 0100) if provided by Modality Worklist.
	>(b)Scheduled Procedure Step Description	(0040,0007)	Populated with Scheduled Procedure Step Description (0040, 0007) from Scheduled Procedure Step Sequence (0040, 0100) if provided by Modality Worklist.
	>(b)Scheduled Protocol Code Sequence	(0040,0008)	Populated with Scheduled Protocol Code Sequence (0040, 0008) from Scheduled Procedure Step Sequence (0040, 0100) if provided by Modality Worklist.
	>(b)Scheduled Procedure Step ID	(0040,0009)	Populated with Scheduled Procedure Step ID (0040, 0009) from Scheduled Procedure Step Sequence (0040, 0100) if provided by Modality Worklist.
	>(b)Requested Procedure ID	(0040,1001)	Populated with Requested Procedure ID (0040, 1001) from Scheduled Procedure Step Sequence (0040, 0100) if provided by Modality Worklist.
	>Requested Procedure Description	(0032,1060)	Populated from Requested Procedure Description in MWL query
	(b)Performed Procedure Step Start Date	(0040,0244)	Date the Performed Procedure Step was started.
	(b)Performed Procedure Step Start Time	(0040,0245)	Time the Performed Procedure Step was started.
	(b)Performed Procedure Step ID	(0040,0253)	Populated with Scheduled Procedure Step ID (0040,0009) if provided by Modality Worklist.
	(b)Performed Procedure Step Description	(0040,0254)	Populated with Scheduled Procedure Step Description (0040,0007) if provided by Modality Worklist.
	(b)Performed Procedure Protocol Code Sequence	(0040,0260)	Populated with Scheduled Protocol Code Sequence (0040,0008) if provided by Modality Worklist.
	(b)Comments on the Performed Procedure Step	(0040,0280)	Populated with Comments on the Scheduled Procedure Step (0040,0400) if provided by Modality Worklist.
	Referenced Performed Procedure Step Sequence	(0008,1111)	Populated with MPPS SOP Class UID and MPPS SOP instance UID of MPPS command sent for the procedure step(s) performed.
General Equipment	Manufacturer	(0008,0070)	Set to “SIEMENS”
	Station Name	(0008, 1010)	Station AE title
	Institution Name	(0008,0080)	System Presets – Organization Name

Module	Attribute	Tag	Notes
			field.
	Software Versions	(0018,1020)	Set to the DICOM Software Version
	Manufacturer's Model Name	(0008,1090)	Set to "ACUSON <Product Name>".
General Image	Instance Number	(0020,0013)	Image number in study (1 - n)
	Patient Orientation	(0020,0020)	Always sent as 0 length attribute
Image Pixel	Samples per Pixel	(0028,0002)	Set to 1 for MONOCHROME2 images, 3 for RGB and YBR_FULL_422 images.
	Photometric Interpretation	(0028,0004)	"YBR_FULL_422" if sent compressed, "RGB" or "MONOCHROME2" if sent uncompressed.
	Planar Configuration	(0028,0006)	Color by plane. Color frame pixel order is configured as a planar image. Set to 0 (color by pixel) for RBG pixel-ordered image, 1 (color by plane) for planar image. Required when Samples per Pixel has a value greater than 1.
	Rows	(0028,0010)	Set to 480 for NTSC; 547 for PAL. For Stress Echo clips this value may be from 228 to 288. This value may be up to 768.
	Columns	(0028,0011)	Set to 640 for NTSC; 692 for PAL. For Stress Echo clips this value may be from 288 to 384. This value may be up to 1024.
	Bits Allocated	(0028,0100)	Set to 8.
	Bits Stored	(0028,0101)	Set to 8.
	High Bit	(0028,0102)	Set to 7.
	Pixel Representation	(0028,0103)	Set to 0.
	Pixel Data	(7FE0, 0010)	
US Image	Image Type	(0008,0008)	Sent as a 0 length attribute.
	[(a)]View List	(0009,212A)	Private attribute
	>[(a)]View Name	(0009,2120)	Private attribute
	[(a)]Stage Name	(0008,2120)	
	[(a)]Stage Number	(0008,2122)	
	[(a)]Number of Stages	(0008,2124)	
	[(a)]View Name	(0008,2127)	
	[(a)]View Number	(0008,2128)	
	[(a)]Number of Views in Stage	(0008,212A)	
	[(a)]Trigger Time	(0018,1060)	
	[(a)]Nominal Interval	(0018,1062)	
	Heart Rate	(0018,1088)	Only provided if heart rate is > 0
	Lossy Image Compression	(0028,2110)	Always set to "01"
SOP Common	SOP Class UID	(0008,0016)	1.2.840.10008.5.1.4.1.1.3.1 or 1.2.840.10008.5.1.4.1.1.3
	SOP Instance UID	(0008,0018)	Generated by X Family system
	Specific Character Set	(0008,0005)	Set to values as defined in Section 7.4 of this document

Module	Attribute	Tag	Notes
Image Plane	Pixel Spacing	(0028,0030)	Pixel Spacing information is only provided for single, full screen, 2D image types (2D image types are B-Mode, B-Mode Color, B-Mode with power).
Cine	Frame Time	(0018,1063)	
Multi-Frame	Number of Frames	(0028,0008)	
	Frame Increment Pointer	(0028,0009)	00181063H
Region Calibration	(c)Sequence of Ultrasound Regions	(0018,6011)	
	>(c)Region Spatial Format	(0018,6012)	B-Mode (Tissue or Color) = 0001H M-Mode (Tissue or Color) = 0002H Spectral (CW/PW) Doppler = 0003H
	>(c)Region Data Type	(0018,6014)	B-Mode, M-Mode = 0001H (Tissue) Spectral Doppler = 0004H (CW Spectral Doppler) Spectral Doppler = 0003H (PW Spectral Doppler)
	>(c)Region Flags	(0018,6016)	1st Bit (LSB) = 1 (All images acquired are transparent) 2nd Bit = 1 (All images acquired are automatically scaled) 3rd Bit = 1 for frequency scale 3rd Bit = 0 for velocity scale. The value of the 3rd bit is undefined for any mode other than Doppler. The value for 3rd bit is undefined if both frequency and velocity scales are selected on the Doppler image. 4th Bit is Reserved and value is always 0
	>(c)Region Location Min X0	(0018,6018)	
	>(c)Region Location Min Y0	(0018,601A)	
	>(c)Region Location Max X1	(0018,601C)	
	>(c)Region Location Max Y1	(0018,601E)	
	>(c)Physical Units X direction	(0018,6024)	B-Mode (Tissue or Color) = 0003H (cm) M-Mode (Tissue or Color) = 0004H (seconds) Spectral (CW/PW) Doppler = 0004H (seconds)
	>(c)Physical Units Y direction	(0018,6026)	B-Mode (Tissue or Color) = 0003H (cm) M-Mode (Tissue or Color) = 0003H (cm) Spectral (CW/PW) Doppler = 0007H (cm/sec)
	>(c)Physical Delta X	(0018,602C)	
	>(c)Physical Delta Y	(0018,602E)	
	>(c)Reference Pixel X0	(0018,6020)	Attribute only set for Spectral Doppler Regions
	>(c)Reference Pixel Y0	(0018,6022)	Attribute only set for Spectral Doppler Regions
	>(c)Reference Pixel Physical Value X	(0018,6028)	Attribute only set for Spectral Doppler Regions

Module	Attribute	Tag	Notes
			When provided, value is always 0.
	>[(c)]Reference Pixel Physical Value Y	(0018,602A)	Attribute only set for Spectral Doppler Regions When provided, value is always 0.
Private Attributes	[(d)]Private Creator	(0011,0010)	Reserves tags 0011, 1000 through 0011, 10FF for use as private tags.
	[(d)]Siemens Medical Solutions Model Name	(0011,1010)	Always set to “<Product Name>”.
	[(d)]DIMAQ Software Version	(0011,1011)	Set to version of DIMAQ software installed.
	[(d)]Private Data	(0011,1020)	For internal X Family use only.
	[(d)]Private Data	(0011,1021)	For internal X Family use only.
	[(d)]Private Creator	(0013,0010)	Reserves tags 0013, 1000 through 0013, 10FF for use as private tags.
	[(d)]Siemens Medical Solutions Model Name	(0013,1010)	Always set to “<Product Name>”.
	[(d)]DIMAQ Software Version	(0013,1011)	Set to version of DIMAQ software installed.
	[(d)]Private Data	(0013,1020)	For internal X Family use only.
	[(d)]Private Creator	(0015,0010)	This group is populated only if data is available. Reserves tags 0015, 1000 through 0015,10FF for use as private tags.
	[(d)]Siemens Medical Solutions Model Name	(0015,1010)	Always set to “<Product Name>”.
	[(d)]DIMAQ Software Version	(0015,1011)	Set to version of DIMAQ software installed.
	[(d)]Private Data	(0015,1020)	For internal X Family use only.
	[(d)]Private Creator	(0017,0010)	This group is populated only if data is available. Reserves tags 0017, 1000 through 0017,10FF for use as private tags.
	[(d)]Siemens Medical Solutions Model Name	(0017,1010)	Always set to “<Product Name>”.
	[(d)]DIMAQ Software Version	(0017,1011)	Set to version of DIMAQ software installed.
	[(d)]Private Data	(0017,1020)	For internal X Family use only.
	Private Creator	(0019,0010)	Reserves tags 0019, 1000 through 0019, 10FF for use as private tags.
Private Attributes	Import Structured Reports	(0019,1020)	Set to “O” or “C” or “CO” if SR options were purchased and SR generation was configured. Otherwise set to “No”. Instructs SCP that it should attempt to import measurements from SR.
	Private Creator	(7FDF,0010)	Reserved tags 7FDF,1000 through 7FDF,FE00 for use as private tags
	Private Creator	(7FDF,0011)	
	Microseconds in unit timestamp	(7FDF,1083)	Set to 20 microsecond
	Acoustic Frame Timestamp	(7FDF,1085)	Time corresponding to the end of ultrasound data collection at the end of

Module	Attribute	Tag	Notes
			each acoustic frame.
	R-Wave Timestamp	(7FDF,1086)	The absolute 64-bit timestamp of R-Wave events.
	ECG Reference Timestamp	(7FDF,1089)	Always set to time stamp of acoustics' first frame
	ECG Sampling Interval	(7FDF,108A)	It depends on ECG sample count
	ECG Sample Count	(7FDF,108B)	Set to count of ECG data value
	ECG Sample Size	(7FDF,108C)	Always set to 128
	ECG Data Value	(7FDF,108D)	Set to ECG data value that each value is a 32-bit signed integer.

(a) The Attribute is only provided for Stress Echo Images.

(b) The Attribute is only provided if the procedure step is queried from the MWL server.

(c) Region Calibration is provided only for 2D (B-Mode), M-Mode and Spectral Doppler Regions. Region Calibration is not supported on Ultrasound Retired images, Screen Captures and post-processed images. Region Calibration is not supported for M-Mode or Spectral Doppler still images taken from Live Imaging.

(d) The Attribute is only provided if the image is written to media.

This table denotes the attributes included in the Ultrasound Multi-Frame Image IOD as implemented on the ACUSON X Family system, when used for 3D volumetric data sets. Each frame represents a single slice from the 3D volume.

Module	Attribute	Tag	Notes
Patient Identification	Patient's Name	(0010,0010)	Patient Data Screen – Last Name, First & Middle fields. Populated from Modality Worklist if used.
	Patient ID	(0010,0020)	Patient Data Screen – ID field. Default is today's date & time (e.g., 03_04_2003_17_54_43 = Apr. 3, 2003 at 5:54:43 PM). Populated from Modality Worklist if used.
Patient Demographic	Patient's Birth Date	(0010,0030)	Patient Data Screen – DOB field. Default is a zero length attribute. Populated from Modality Worklist if used.
	Patient's Sex	(0010,0040)	Patient Data Screen – Gender field. M = male F = female. O= Other Default is a zero length attribute. Populated from Modality Worklist if used.
	Patient's Age	(0010,1010)	Calculated from Patient Data Screen DOB field.
	Patient's Size	(0010,1020)	Patient Data Screen –

Module	Attribute	Tag	Notes
			Height field. Populated from Modality Worklist if used.
	Patient's Weight	(0010,1030)	Patient Data Screen – Weight field. Populated from Modality Worklist if used.
	Other Patient IDs	(0010,1000)	Populated from Worklist
Patient Study	Admitting Diagnosis Description	(0008,1080)	Patient Data Screen – Indication field. Populated from Modality Worklist if used.
General Study	Study Instance UID	(0020,000D)	Populated from Modality Worklist if used; generated by X Family system otherwise.
	Image Type	(0008,0008)	Example value: ORIGINAL\PRIMARY\TEE\0001 Value 1: ORIGINAL or DERIVED Value 2: PRIMARY or SECONDARY Value 3: Set to value by exam type Value 4: It is constructed as a modality bit map to allow for a description of multi-modality displays. In using this bit map, the sum of the values of the various modalities will unambiguously determine the constituent modalities. 0001 = 2D Imaging 0002 = M-Mode 0004 = CW Doppler 0008 = PW Doppler 0010 = Color Doppler 0020 = Color M-Mode 0040 = 3D Rendering
	Study Date	(0008,0020)	Date the exam started.
	Study Time	(0008,0030)	Time the exam started.
	Referring Physician's Name	(0008,0090)	Patient Data Screen – Physician field. Populated from Modality Worklist if used.
	Study ID	(0020,0010)	Generated by X Family system
	Accession Number	(0008,0050)	Patient Data Screen – Accession # field. Populated from Modality Worklist if used.
	Study Description	(0008,1030)	Populated with the first attribute from Modality Worklist that contains a valid value from the following list of attributes: Study Description (0008, 1030), Scheduled Procedure Step Description (0040, 0007), Requested Procedure Description (0032, 1060). If Modality Worklist was not used or none of the attributes contains a valid value QuickSet Screen – Description field is used. If Decscription field is empty, QuickSet

Module	Attribute	Tag	Notes
			Screen – Exam/QuickSet name is used.
General Series	Modality	(0008,0060)	Always set to “US”
	Series Instance UID	(0020,000E)	Generated by X Family system
	Series Number	(0020,0011)	Series Number in study (1-n).
	Laterality	(0020,0060)	Always sent as 0 length attribute
	(b)Series Date	(0008,0021)	Date the series started.
	(b)Series Time	(0008,0031)	Time the series started.
	(b)Series Description	(0008,103E)	Populated with Scheduled Procedure Step Description if a value was provided by Modality Worklist.
	(b)Protocol Name	(0018,1030)	The exam type of the most recent image stored in a particular series. If no images are stored for a series then the value is set to “Ultrasound”.
	(b)Request Attributes Sequence	(0040,0275)	Populated with Scheduled Procedure Step Sequence (0040, 0100) if provided by Modality Worklist.
	>(b)Scheduled Procedure Step Description	(0040,0007)	Populated with Scheduled Procedure Step Description (0040, 0007) from Scheduled Procedure Step Sequence (0040, 0100) if provided by Modality Worklist.
	>(b)Scheduled Protocol Code Sequence	(0040,0008)	Populated with Scheduled Protocol Code Sequence (0040, 0008) from Scheduled Procedure Step Sequence (0040, 0100) if provided by Modality Worklist.
	>(b)Scheduled Procedure Step ID	(0040,0009)	Populated with Scheduled Procedure Step ID (0040, 0009) from Scheduled Procedure Step Sequence (0040, 0100) if provided by Modality Worklist.
	>(b)Requested Procedure ID	(0040,1001)	Populated with Requested Procedure ID (0040, 1001) from Scheduled Procedure Step Sequence (0040, 0100) if provided by Modality Worklist.
	>Requested Procedure Description	(0032,1060)	Populated from Requested Procedure Description in MWL query
	(b)Performed Procedure Step Start Date	(0040,0244)	Date the Performed Procedure Step was started.
	(b)Performed Procedure Step Start Time	(0040,0245)	Time the Performed Procedure Step was started.
	(b)Performed Procedure Step ID	(0040,0253)	Populated with Scheduled Procedure Step ID (0040,0009) if provided by Modality Worklist.
	(b)Performed Procedure Step Description	(0040,0254)	Populated with Scheduled Procedure Step Description (0040,0007) if provided by Modality Worklist.
	(b)Performed Procedure Protocol Code	(0040,0260)	Populated with Scheduled Protocol Code

Module	Attribute	Tag	Notes
	Sequence		Sequence (0040,0008) if provided by Modality Worklist.
	[(b)]Comments on the Performed Procedure Step	(0040,0280)	Populated with Comments on the Scheduled Procedure Step (0040,0400) if provided by Modality Worklist.
	Referenced Performed Procedure Step Sequence	(0008,1111)	Populated with MPPS SOP Class UID and MPPS SOP instance UID of MPPS command sent for the procedure step(s) performed.
General Equipment	Manufacturer	(0008,0070)	Set to “SIEMENS”
	Station Name	(0008, 1010)	Station AE title
	Institution Name	(0008,0080)	System Presets – Organization Name field.
	Software Versions	(0018,1020)	Set to the DICOM Software Version
	Manufacturer’s Model Name	(0008,1090)	Set to “ACUSON <Product Name>”.
General Image	Instance Number	(0020,0013)	Image number in study (1 - n)
	Patient Orientation	(0020,0020)	Always sent as 0 length attribute
Image Pixel	Samples per Pixel	(0028,0002)	Set to 1 for MONOCHROME2 images, 3 for RGB and YBR_FULL_422 images.
	Photometric Interpretation	(0028,0004)	“YBR_FULL_422” if sent compressed, “RGB” or “MONOCHROME2“ if sent uncompressed.
	Planar Configuration	(0028,0006)	Color by plane. Color frame pixel order is configured as a planar image. Set to 0 (color by pixel) for RBG pixel-ordered image, 1 (color by plane) for planar image. Required when Samples per Pixel has a value greater than 1.
	Rows	(0028,0010)	Set to 480 for NTSC; 547 for PAL. For Stress Echo clips this value may be from 228 to 288. This value may be up to 768.
	Columns	(0028,0011)	Set to 640 for NTSC; 692 for PAL. For Stress Echo clips this value may be from 288 to 384. This value may be up to 1024.
	Bits Allocated	(0028,0100)	Set to 8.
	Bits Stored	(0028,0101)	Set to 8.
	High Bit	(0028,0102)	Set to 7.
	Pixel Representation	(0028,0103)	Set to 0.
	Pixel Data	(7FE0, 0010)	
US Image	Image Type	(0008,0008)	Sent as a 0 length attribute.
	[(a)]View List	(0009,212A)	Private attribute
	>[(a)]View Name	(0009,2120)	Private attribute
	[(a)]Stage Name	(0008,2120)	
	[(a)]Stage Number	(0008,2122)	
	[(a)]Number of Stages	(0008,2124)	
	[(a)]View Name	(0008,2127)	
	[(a)]View Number	(0008,2128)	

Module	Attribute	Tag	Notes
	[(a)]Number of Views in Stage	(0008,212A)	
	[(a)]Trigger Time	(0018,1060)	
	[(a)]Nominal Interval	(0018,1062)	
	Heart Rate	(0018,1088)	Only provided if heart rate is > 0
	Lossy Image Compression	(0028,2110)	Always set to “01”
SOP Common	SOP Class UID	(0008,0016)	1.2.840.10008.5.1.4.1.1.3.1 or 1.2.840.10008.5.1.4.1.1.3
	SOP Instance UID	(0008,0018)	Generated by X Family system
	Specific Character Set	(0008,0005)	Set to values as defined in Section 7.4 of this document
Image Plane	Pixel Spacing	(0028,0030)	Pixel Spacing information is only provided for single, full screen, 2D image types (2D image types are B-Mode, B-Mode Color, B-Mode with power).
Cine	Frame Time	(0018,1063)	
Multi-Frame	Number of Frames	(0028,0008)	
	Frame Increment Pointer	(0028,0009)	00181063H
Region Calibration	[(c)]Sequence of Ultrasound Regions	(0018,6011)	
	>[(c)]Region Spatial Format	(0018,6012)	B-Mode (Tissue or Color) = 0001H M-Mode (Tissue or Color) = 0002H Spectral (CW/PW) Doppler = 0003H
	>[(c)]Region Data Type	(0018,6014)	B-Mode, M-Mode = 0001H (Tissue) Spectral Doppler = 0004H (CW Spectral Doppler) Spectral Doppler = 0003H (PW Spectral Doppler)
	>[(c)]Region Flags	(0018,6016)	1st Bit (LSB) = 1 (All images acquired are transparent) 2nd Bit = 1 (All images acquired are automatically scaled) 3rd Bit = 1 for frequency scale 3rd Bit = 0 for velocity scale. The value of the 3rd bit is undefined for any mode other than Doppler. The value for 3rd bit is undefined if both frequency and velocity scales are selected on the Doppler image. 4th Bit is Reserved and value is always 0.
	>[(c)]Region Location Min X0	(0018,6018)	
	>[(c)]Region Location Min Y0	(0018,601A)	
	>[(c)]Region Location Max X1	(0018,601C)	
	>[(c)]Region Location Max Y1	(0018,601E)	
	>[(c)]Physical Units X direction	(0018,6024)	B-Mode (Tissue or Color) = 0003H (cm) M-Mode (Tissue or Color) = 0004H (seconds) Spectral (CW/PW) Doppler = 0004H (seconds)

Module	Attribute	Tag	Notes
	>[(c)]Physical Units Y direction	(0018,6026)	B-Mode (Tissue or Color) = 0003H (cm) M-Mode (Tissue or Color) = 0003H (cm) Spectral (CW/PW) Doppler = 0007H (cm/sec)
	>[(c)]Physical Delta X	(0018,602C)	
	>[(c)]Physical Delta Y	(0018,602E)	
	>[(c)]Reference Pixel X0	(0018,6020)	Attribute only set for Spectral Doppler Regions
	>[(c)]Reference Pixel Y0	(0018,6022)	Attribute only set for Spectral Doppler Regions
	>[(c)]Reference Pixel Physical Value X	(0018,6028)	Attribute only set for Spectral Doppler Regions When provided, value is always 0.
	>[(c)]Reference Pixel Physical Value Y	(0018,602A)	Attribute only set for Spectral Doppler Regions When provided, value is always 0.
	>[(a,c)]Transducer Frequency	(0018,6030)	
	>[(a,c)]Pulse Repetition Frequency	(0018,6032)	
	>[(a,c)]Doppler Correction Angle	(0018,6034)	
Private Attributes	[(d)]Private Creator	(0011,0010)	Reserves tags 0011, 1000 through 0011, 10FF for use as private tags.
	[(d)]Siemens Medical Solutions Model Name	(0011,1010)	Always set to “<Product Name>”.
	[(d)]DIMAQ Software Version	(0011,1011)	Set to version of DIMAQ software installed.
	[(d)]Private Data	(0011,1020)	For internal X Family use only.
	[(d)]Private Data	(0011,1021)	For internal X Family use only.
	[(d)]Private Creator	(0013,0010)	Reserves tags 0013, 1000 through 0013, 10FF for use as private tags.
	[(d)]Siemens Medical Solutions Model Name	(0013,1010)	Always set to “<Product Name>”.
	[(d)]DIMAQ Software Version	(0013,1011)	Set to version of DIMAQ software installed.
	[(d)]Private Data	(0013,1020)	For internal X Family use only.
	[(d)]Private Creator	(0015,0010)	This group is populated only if data is available. Reserves tags 0015, 1000 through 0015,10FF for use as private tags.
	[(d)]Siemens Medical Solutions Model Name	(0015,1010)	Always set to “<Product Name>”.
	[(d)]DIMAQ Software Version	(0015,1011)	Set to version of DIMAQ software installed.
Private Attributes	[(d)]Private Data	(0015,1020)	For internal X Family use only.
	[(d)]Private Creator	(0017,0010)	This group is populated only if data is available. Reserves tags 0017, 1000 through 0017,10FF for use as private tags.
	[(d)]Siemens Medical Solutions Model Name	(0017,1010)	Always set to “<Product Name>”.

Module	Attribute	Tag	Notes
	[(d)]DIMAQ Software Version	(0017,1011)	Set to version of DIMAQ software installed.
	[(d)]Private Data	(0017,1020)	For internal X Family use only.
	Private Creator	(0019,0010)	Reserves tags 0019, 1000 through 0019, 10FF for use as private tags.
	Import Structured Reports	(0019,1020)	Set to “O” or “C” or “CO” if SR options were purchased and SR generation was configured. Otherwise set to “No”. Instructs SCP that it should attempt to import measurements from SR.
	Private Creator	(7FDF,0010)	Reserved tags 7FDF,1000 through 7FDF,FE00 for use as private tags
	Private Creator	(7FDF,0011)	
	Microseconds in unit timestamp	(7FDF,1083)	Set to 20 microsecond
	Acoustic Frame Timestamp	(7FDF,1085)	Time corresponding to the end of ultrasound data collection at the end of each acoustic frame.
	R-Wave Timestamp	(7FDF,1086)	The absolute 64-bit timestamp of R-Wave events.
	ECG Reference Timestamp	(7FDF,1089)	Always set to time stamp of acoustics’ first frame
	ECG Sampling Interval	(7FDF,108a)	It depends on ECG sample count
	ECG Sample Count	(7FDF,108b)	Set to count of ECG data value
	ECG Sample Size	(7FDF,108c)	Always set to 128
	ECG Data Value	(7FDF,108d)	Set to ECG data value that each value is a 32-bit signed integer.

Module	Attribute	Tag	Notes
X Family Private Attributes	Private Creator	(0039,0010)	SIEMENS MED SMS USG Antares 3D VOLUME
	Release Version	(0039,1000)	3.0.3
	VolumeRawDataType	(0039,1004)	Data Type (Cartesian/Scan-Converted/PreScanConverted Format
	ScanType	(0039,1005)	
	ZlateralMin	(0039,1006)	Minimum span along the depth (wobble min.)
	ZlateralSpan	(0039,1007)	Span along the depth (wobble span)
	ZRadiusOfCurvature	(0039,1008)	Radius of curvature, in (wobble)
X Family Private Attributes	WobbleCorrection	(0039,1009)	Wobbling shear correction factor (0.0 to 1.0)
	ScaleAlongWidth	(0039,1010)	Width scaling mm/pixel
	ScaleAlongHeight	(0039,1011)	Height scaling mm/pixel
	ScaleAlongDepth	(0039,1012)	Depth scaling mm/pixel
	BufferSize	(0039,1013)	

Module	Attribute	Tag	Notes
	AcquisitionRate	(0039,1014)	Time required to acquire one volume
	DepthMinCm	(0039,1015)	The min/start depth for the BImage
	IsLeftRightFlippedEn	(0039,1016)	Whether the acquired images were Left/Right flipped
	IsUpDownFlippedEn	(0039,1017)	Whether the acquired images were up/down flipped
	IsVolumeGeomAccurate	(0039,1018)	Is the volume passed is geometrically accurate (In order to display ruler)
	BByteMaskOffset	(0039,1019)	Bytemasks is the offset fro Mask data which is used for space leaping optimization in renderer
	BByteMaskSize	(0039,1020)	Size of the byte mask data
	DepthMaxCm	(0039,1021)	The max/end depth for the BImage
	AcqPlaneRotationDeg	(0039,1022)	Angle by which the volume is to be rotated around, normal to the Aquisition plane (Z axis) (in degrees)
	BeamAxialSpan	(0039,1023)	beam span, in mm
	BeamLateralMin	(0039,1024)	Min lateral angle
	BeamLateralSpan	(0039,1025)	Angular span
	BeamAxialMin	(0039,1026)	Axial min or radius of curvature in 2d
	NumDisplaySamples	(0039,1027)	Number of actual samples along each beam
	DVolumeWidth	(0039,1028)	Volume Width of the Power/Doppler Volume
	DVolumeDepth	(0039,1029)	Volume Depth of the Power/Doppler Volume
	DVolumeHeight	(0039,1030)	Volume Height of the Power/Doppler Volume
	DVolumePosX	(0039,1031)	
	DVolumePosY	(0039,1032)	
	DVolumePosZ	(0039,1033	
	DBeamAxialMin	(0039,1034)	Axial min or radius of curvature in 2d for Power/Doppler
	DBeamAxialSpan	(0039,1035)	
	DBeamLateralMin	(0039,1036)	Min lateral angle for Power/Doppler
	DBeamLateralSpan	(0039,1037)	Angular span from Power/Doppler
	NumOfVolumesInSequence	(0039,1038)	Number Of Volumes In Sequence
X Family Private Attributes	DByteMaskOffset	(0039,1039)	Bytemasks is the offset for the mask data which is used for space leaping optimization in renderer when in Power/Doppler
	DByteMaskSize	(0039,1040)	Size of the byte mask data when in Power/Doppler
	PrivateCreatorVersionOfBookmark	(0039,1050)	3.6.0
	BCutPlaneEnable	(0039,1051)	Cut-plane volume rendering for B data
	BMprColorMapIndex	(0039,1052)	Index of the tint colormap for MPR B data

Module	Attribute	Tag	Notes
X Family Private Attributes	BMprDynamicRangeDb	(0039,1053)	dB value of dynamic range curve for MPR B data
	BMprGrayMapIndex	(0039,1054)	Index of the image enhancement LUT for the MPR B data
	BVolumeRenderMode	(0039,1055)	Volume rendering mode for B data
	BVrBrightness	(0039,1056)	Brightness value for the volume rendered B data
	BVrContrast	(0039,1057)	Contrast value for the volume rendered B data
	BVrColorMapIndex	(0039,1058)	Index of the tint colormap for the volume rendered B data
	BVrDynamicRangeDb	(0039,1059)	dB value of dynamic range curve for the volume rendered B data
	BVrGrayMapIndex	(0039,105a)	Index of the image enhancement LUT for the volume rendered B data
	BVrOpacity	(0039,105b)	Opacity percentage of the opacity curve used for the volume rendered B data
	BVrThresholdHigh	(0039,105c)	High threshold of the opacity curve used for the volume rendered B data
	BVrThresholdLow	(0039,105d)	Low threshold of the opacity curve used for the volume rendered B data
	BPreProcessFilterMix	(0039,105e)	Mix percentage used for mixing filtered data for the volume rendered B data
	CCutPlaneEnable	(0039,105f)	Cut-plane volume rendering for B data
	CFrontClipMode	(0039,1060)	Flag indicating whether Niche and Parallel Cut edit operation will clip power data.
	CMprColorMapIndex	(0039,1061)	Index of the tint colormap for MPR power data
	CMprColorFlowPriorityIndex	(0039,1062)	Threshold representing amount of power data cut from the MPR power data
	CVolumeRenderMode	(0039,1063)	Volume rendering mode for power data
	CVrColorMapIndex	(0039,1064)	Index of the tint colormap for the volume rendered power data
	CVrColorFlowPriorityIndex	(0039,1065)	Threshold representing amount of power data cut from the volume rendered power data
	CVrOpacity	(0039,1066)	Opacity percentage of the opacity curve used for the volume rendered power data
	CVrThresholdHigh	(0039,1067)	High threshold of the opacity curve used for the volume rendered power data
	CVrThresholdLow	(0039,1068)	Low threshold of the opacity curve used for the volume rendered power data
	VoiMode	(0039,1069)	Flag indicating whether VOI is on or off
	VoiRotationOffsetDeg	(0039,106a)	Fixed rotation applied to VOI
	VoiSizeRatioX	(0039,106b)	Width of VOI in relative units
	VoiSizeRatioY	(0039,106c)	Length of VOI in relative units
	VoiSizeRatioZ	(0039,106d)	Height of VOI in relative units

Module	Attribute	Tag	Notes
X Family Private Attributes	VoiSyncPlane	(0039,106e)	Plane synced to the VOI
	VoiViewMode	(0039,106f)	Type indicating whether the rendering is synced to the front or back of the VOI
	VrOrientationA	(0039,1070)	Matrix representing the oritentation of the volume rendered image
	MprOrientationA	(0039,1071)	Matrix representing the oritentation of the MPRs
	VrOffsetVector	(0039,1072	Vector representing the vertical and horizontal offset of the volume on the display
	BlendingRatio	(0039,1073)	Value indicating the amount of blending between B and power data when blend is on
	FusionBlendMode	(0039,1074)	Mode for fusing in one display power and B volume rendered data
	QualityFactor	(0039,1075)	Factor determining the volume rendering quality
	RendererType	(0039,1076)	Type of the rendererer engine used
	SliceMode	(0039,1077)	Mode for displaying the textured map MPRs in the 3D quadrant
	ActiveQuad	(0039,1078)	Value indicating which quadrant in the display is active
	ScreenMode	(0039,1079)	Value indicating which screen layout is applied
	CutPlaneSide	(0039,107a)	Value indicating which half space of the cut-plane is used for volume rendering
	WireframeMode	(0039,107b)	Flag indicating whether wireframe around rendered data is on or off
	CrossmarkMode	(0039,107c)	Flag indicating whether crossmark is shown on the display
	MprDisplayType	(0039,107d)	Value indicating whether B or power or B+power data are displayed in the MPRs
	VolumeDisplayType	(0039,107e)	Value indicating whether B or power or B+power data are displayed in the volume rendered image
	LastReset	(0039,107f)	Value indicating the last reset
	LastNonFullScreenMode	(0039,1080)	Value indicating the last active quadrant before entering full screen
	MprToolIndex	(0039,1081)	Index indicating which tool (rotation, pan, resizing) is used on the MPRs
	VoiToolIndex	(0039,1082)	Index indicating which tool (rotation, pan, resizing) is used on the volume rendered image when VOI is on
	ToolLoopMode	(0039,1083)	Value indicating in which loop
	VolumeArbMode	(0039,1084)	Index indicating whether volume or MPR rotation is active on the 3D display window
	MprZoomEn	(0039,1085)	Flag indicating whether zoom is enabled in the MPR

Module	Attribute	Tag	Notes
X Family Private Attributes	IsVolumeZoomEn	(0039,1086)	Flag indicating whether zoom is enabled in the rendered volume
	ZoomLevelMpr	(0039,1087)	Value indicating the amount of zoom (in relative units) applied in the MPR
	ZoomLevelVolume	(0039,1088)	Value indicating the amount of zoom (in relative units) applied in the rendered volume
	IsAutoRotateEn	(0039,1089)	Flag indicating whether animation is enabled
	AutoRotateAxis	(0039,108a)	Value indicating the axis of rotation for the animation
	AutoRotateRangeIndex	(0039,108b)	Value indicating the total angle range for the animation
	AutoRotateSpeedIndex	(0039,108c)	Value indicating the speed (in relative units) for the animation
	CVrBrightness	(0039,108d)	Brightness value for the volume rendered power data
	CFlowStateIndex	(0039,108e)	Index for flow state of power data (low, medium, high)
	BSubmodeIndex	(0039,108f)	Index for indicating the B submode (THI, B, etc...)
	CSubmodeIndex	(0039,1090)	Index for indicating the C submode
	DICOMAttrNameCutPlane	(0039,1091	Quadrant used to cut volume when colume cut enabled
	BookmarkChunkId	(0039,1092)	Index of Bookmark
	SequenceMinChunkId	(0039,1093)	Begin range index of volume sequence
	SequenceMaxChunkId	(0039,1094)	End range index of volume sequence
	VolumeRateHz	(0039,1095)	Rate at which volumes are rendered
	VoiPositionOffsetX	(0039,109a)	Offset in the x dimension between the center of the VOI and center of volume in relative units
	VoiPositionOffsetY	(0039,109b)	Offset in the y dimension between the center of the VOI and center of volume in relative units
	VoiPositionOffsetZ	(0039,109c)	Offset in the z dimension between the center of the VOI and center of volume in relative units
	VrToolIndex	(0039,109d)	Index indicating which tool (rotation, pan, resizing) is used on the volume rendered image
	ShadingPercent	(0039,109e)	Value indicating the amount of shading in the volume rendered image
	VolumeType	(0039,109f)	Value indicating the type of volume (B or B and Power)
	VolumeRateHz	(0039,1095)	Rate at which volumes are rendered
	DICOMAttrNameVrQuadDisplayType	(0039,10a0)	The type of display to show in the volume quadrant
	DICOMAttrNameMprCenterLocation	(0039,10a1)	Offset location of slice centerpoint with respect to quadrant center

Module	Attribute	Tag	Notes
	DICOMAttrNameSliceMode	(0039,1077)	Value indicating that system in multislice mode
	DICOMAttrNameSliceRangeType	(0039,10e0)	Value indicating type of slice mode (horizontal/vertical)
	DICOMAttrNameSliceMPRPlane	(0039,10e1)	Value indicating selected MPR for slice mode (Acquisition/Elevation/Coronal)
	DICOMAttrNameSliceLayout	(0039,10e2)	Selected layout for slice mode (2x2, 3x3, 4x4, 6x6)
	DICOMAttrNameSliceSpacing	(0039,10e3)	Value indicates the spacing between MPR slices
	DICOMAttrNameVoiPivotX	(0039,10e6)	Curved TOP VOI pivot x
	DICOMAttrNameVoiPivotY	(0039,10e7)	Curved TOP VOI pivot y
	DICOMAttrNameVoiPivotZ	(0039,10e8)	Curved TOP VOI pivot z
	DICOMAttrNameCTopVoiQuad	(0039,10e9)	Curved TOP VOI Quad

The following private attributes get added to the X Family Multiframe Object header when the FourSight TEE™ product is used:

Attribute	Group	Element	Notes
Acuson Image Apex X	0x7fdf	0x100b	
Acuson Image Apex Y	0x7fdf	0x100c	
Left Angle	0x7fdf	0x1020	
Right Angle	0x7fdf	0x1022	
B-Color-On Flag	0x7fdf	0x100D	
Color Map Family	0x7fdf	0x1024	
Full Colormap	0x7fdf	0x1025	
Color Baseline	0x7fdf	0x1027	
CD Velocity Scale Min	0x7fdf	0x1063	
CD Velocity Scale Max	0x7fdf	0x1064	
3DCard Step Angle	0x7fdf	0x1070	
3DCard Xdcr Angle	0x7fdf	0x1071	
Acquisition Type	0x7fdf	0x1010	String value, e.g "3D_CARDIOVIEW"
3DCard Clipset ID	0x7fdf	0x1090	
Application Name	0x7fdf	0x5050	Application Name (fourSight TEE or MVA)
MVA Bookmark Filename	0x7fdf	0x5051	bookmark information for MVA

Module	Attribute	Tag	Notes
Patient Identification	Patient's Name	(0010,0010)	Patient Data Screen – Last Name, First & Middle fields. Populated from Modality Worklist if used.
	Patient ID	(0010,0020)	Patient Data Screen – ID field. Default is today's date & time (e.g., 03_04_2003_17_54_43 = Apr. 3, 2003 at 5:54:43 PM). Populated from Modality Worklist if used.

Module	Attribute	Tag	Notes
Patient Demographic	Patient's Birth Date	(0010,0030)	Patient Data Screen – DOB field. Default is a zero length attribute. Populated from Modality Worklist if used.
	Patient's Sex	(0010,0040)	Patient Data Screen – Gender field. M = male F = female. O= Other Default is a zero length attribute. Populated from Modality Worklist if used.
	Patient's Age	(0010,1010)	Calculated from Patient Data Screen DOB field.
	Patient's Size	(0010,1020)	Patient Data Screen – Height field. Populated from Modality Worklist if used.
	Patient's Weight	(0010,1030)	Patient Data Screen – Weight field. Populated from Modality Worklist if used.
	Other Patient IDs	(0010,1000)	Populated from Worklist
Patient Study	Admitting Diagnosis Description	(0008,1080)	Patient Data Screen – Indication field. Populated from Modality Worklist if used.
General Study	Study Instance UID	(0020,000D)	Populated from Modality Worklist if used; generated by X Family systemotherwise.
	Study Date	(0008,0020)	Date the exam started.
	Study Time	(0008,0030)	Time the exam started.
	Referring Physician's Name	(0008,0090)	Patient Data Screen – Physician field. Populated from Modality Worklist if used.
	Study ID	(0020,0010)	Generated by X Family system
	Accession Number	(0008,0050)	Patient Data Screen – Accession # field. Populated from Modality Worklist if used.
	Study Description	(0008,1030)	Populated with the first attribute from Modality Worklist that contains a valid value from the following list of attributes: Study Description (0008,1030), Scheduled Procedure Step Description (0040,0007), Requested Procedure Description (0032,1060). If Modality Worklist was not used or none of the attributes contains a valid value, QuickSet Screen – Description field is used. If Decscription field is empty, QuickSet Screen Exam/QuickSet name is used.
General Series	Modality	(0008,0060)	Always set to "US"
	Series Instance UID	(0020,000E)	Generated by X Family system
	Series Number	(0020,0011)	Series Number in study (1-n).
	Laterality	(0020,0060)	Always sent as 0 length attribute
	[(b)]Series Date	(0008,0021)	Date the series started.
	[(b)]Series Time	(0008,0031)	Time the series started.
	[(b)]Series Description	(0008,103E)	Populated with Scheduled Procedure Step Description if a value was provided by

Module	Attribute	Tag	Notes
			Modality Worklist.
	(b)Protocol Name	(0018,1030)	The exam type of the most recent image stored in a particular series. If no images are stored for a series then the value is set to “Ultrasound”.
	(b)Request Attributes Sequence	(0040,0275)	Populated with Scheduled Procedure Step Sequence (0040,0100) if provided by Modality Worklist.
	>(b)Scheduled Procedure Step Description	(0040,0007)	Populated with Scheduled Procedure Step Description (0040,0007) from Scheduled Procedure Step Sequence (0040,0100) if provided by Modality Worklist.
	>(b)Scheduled Protocol Code Sequence	(0040,0008)	Populated with Scheduled Protocol Code Sequence (0040,0008) from Scheduled Procedure Step Sequence (0040,0100) if provided by Modality Worklist.
	>(b)Scheduled Procedure Step ID	(0040,0009)	Populated with Scheduled Procedure Step ID (0040,0009) from Scheduled Procedure Step Sequence (0040,0100) if provided by Modality Worklist.
	>(b)Requested Procedure ID	(0040,1001)	Populated with Requested Procedure ID (0040,1001) from Scheduled Procedure Step Sequence (0040,0100) if provided by Modality Worklist.
	>Requested Procedure Description	(0032,1060)	Populated from Requested Procedure Description in MWL query
	(b)Performed Procedure Step Start Date	(0040,0244)	Date the Performed Procedure Step was started.
	(b)Performed Procedure Step Start Time	(0040,0245)	Time the Performed Procedure Step was started.
	(b)Performed Procedure Step ID	(0040,0253)	Populated with Scheduled Procedure Step ID (0040,0009) if provided by Modality Worklist.
	(b)Performed Procedure Step Description	(0040,0254)	Populated with Scheduled Procedure Step Description (0040,0007) if provided by Modality Worklist.
	(b)Performed Procedure Protocol Code Sequence	(0040,0260)	Populated with Scheduled Protocol Code Sequence (0040,0008) if provided by Modality Worklist.
	(b)Comments on the Performed Procedure Step	(0040,0280)	Populated with Comments on the Scheduled Procedure Step (0040,0400) if provided by Modality Worklist.
	Referenced Performed Procedure Step Sequence	(0008,1111)	Populated with MPPS SOP Class UID and MPPS SOP instance UID of MPPS command sent for the procedure step(s) performed.
SC Equipment Module	Conversion Type	(0008,0064)	Set to “WSD”
General Equipment	Manufacturer	(0008,0070)	Set to “SIEMENS”
	Institution Name	(0008,0080)	System Presets – Organization Name

Module	Attribute	Tag	Notes
			field.
	Station Name	(0008, 1010)	Station AE title
	Software Versions	(0018,1020)	Set to the DICOM Software Version
	Manufacturer's Model Name	(0008,1090)	Set to "ACUSON <Product Name>".
General Image	Instance Number	(0020,0013)	Image number in study (1 – n)
	Patient Orientation	(0020,0020)	Always sent as 0 length attribute.
Image Pixel	Samples per Pixel	(0028,0002)	Set to 1 for MONOCHROME2 images, 3 for RGB images.
	Photometric Interpretation	(0028,0004)	"RGB" or "MONOCHROME2"
	Planar Configuration	(0028,0006)	Color by plane. Color frame pixel order is configured as a planar image. Set to 0 (color by pixel) for RBG pixel-ordered image, 1 (color by plane) for planar image. Required when Samples per Pixel has a value greater than 1.
	Rows	(0028,0010)	Set to 480 for NTSC; 547 for PAL. This value may be up to 768.
	Columns	(0028,0011)	Set to 640 for NTSC; 692 for PAL. This value may be up to 1024.
	Bits Allocated	(0028,0100)	Set to 8.
	Bits Stored	(0028,0101)	Set to 8.
	High Bit	(0028,0102)	Set to 7.
	Pixel Representation	(0028,0103)	Set to 0.
	Pixel Data	(7FE0,0010)	
SOP Common	SOP Class UID	(0008,0016)	1.2.840.10008.5.1.4.1.1.7
	SOP Instance UID	(0008,0018)	Generated by X Family system
	Specific Character Set	(0008,0005)	Set to values as defined in Section 7.4 of this document
Private Attributes	[(a)]Private Creator	(0011,0010)	Reserves tags 0011, 1000 through 0011,10FF for use as private tags.
	[(a)]Siemens Medical Solutions Model Name	(0011,1010)	Always set to "<Product Name>".
	[(a)]DIMAQ Software Version	(0011,1011)	Set to version of DIMAQ software installed.
	[(a)]Private Data	(0011,1020)	For internal X Family use only.
	[(a)]Private Data	(0011,1021)	For internal X Family use only.
	[(a)]Private Creator	(0013,0010)	Reserves tags 0013,1000 through 0013,10FF for use as private tags.
	[(a)]Siemens Medical Solutions Model Name	(0013,1010)	Always set to "<Product Name>".
	[(a)]DIMAQ Software Version	(0013,1011)	Set to version of DIMAQ software installed.
	[(a)]Private Data	(0013,1020)	For internal X Family use only.
	[(a)]Private Creator	(0015,0010)	This group is populated only if data is available. Reserves tags 0015,1000 through 0015,10FF for use as private tags.
	[(a)]Siemens Medical Solutions Model	(0015,1010)	Always set to "<Product Name>".

Module	Attribute	Tag	Notes
	Name		
	[(a)]DIMAQ Software Version	(0015,1011)	Set to version of DIMAQ software installed.
	[(a)]Private Data	(0015,1020)	For internal X Family use only.
	[(a)]Private Creator	(0017,0010)	This group is populated only if data is available. Reserves tags 0017,1000 through 0017,10FF for use as private tags.
	[(a)]Siemens Medical Solutions Model Name	(0017,1010)	Always set to "<Product Name>".
	[(a)]DIMAQ Software Version	(0017,1011)	Set to version of DIMAQ software installed.
	[(a)]Private Data	(0017,1020)	For internal X Family use only.
	Private Creator	(0019,0010)	Reserves tags 0019,1000 through 0019,10FF for use as private tags.
	Import Structured Reports	(0019,1020)	Set to "O" if Obstetric SR options were purchased and SR generation was configured. Otherwise set to "No". Instructs SCP that it should attempt to import Obstetric measurements from SR.

[(a)] The Attribute is only provided if the image is written to media.

[(b)] The Attribute is only provided if the procedure step is queried from the MWL server.

The following table denotes the attributes included in the Comprehensive SR Object as implemented on the ACUSON X Family system. Attributes not listed are not used.

Module	Attribute	Tag	Notes
Patient	Patient's Name	(0010,0010)	Patient Data Screen – Last Name, First & Middle fields. Populated from Modality Worklist if used.
	Patient ID	(0010,0020)	Patient Data Screen – ID field. Default is today's date & time (e.g., 03_04_2003_17_54_43 = Apr. 3, 2003 at 5:54:43 PM). Populated from Modality Worklist if used.
	Patient's Birth Date	(0010,0030)	Patient Data Screen – DOB field. Default is a zero length attribute. Populated from Modality Worklist if used.
	Patient's Sex	(0010,0040)	Patient Data Screen – Gender field. M = male F = female. O = Other Default is a zero length attribute. Populated from Modality Worklist if used.
	Patient's Size	(0010,1020)	Patient Data Screen – Height field. Populated from Modality Worklist if used.

Module	Attribute	Tag	Notes
	Patient's Weight	(0010,1030)	Patient Data Screen – Weight field. Populated from Modality Worklist if used.
Patient Study	Admitting Diagnosis Description	(0008,1080)	Patient Data Screen – Indication field. Populated from Modality Worklist if used.
General Study	Study Instance UID	(0020,000D)	Populated from Modality Worklist if used; generated by X Family system otherwise
	Study Date	(0008,0020)	Date the exam started.
	Study Time	(0008,0030)	Time the exam started.
	Referring Physician's Name	(0008,0090)	Patient Data Screen – Physician field. Populated from Modality Worklist if used.
	Study ID	(0020,0010)	Generated by X Family system
	Accession Number	(0008,0050)	Patient Data Screen – Accession # field. Populated from Modality Worklist if used.
	Study Description	(0008,1030)	Populated with the first attribute from Modality Worklist that contains a valid value from the following list of attributes: Study Description (0008,1030), Scheduled Procedure Step Description (0040,0007), Requested Procedure Description (0032,1060). If Modality Worklist was not used or none of the attributes contains a valid value, QuickSet Screen – Description field is used. If Decscription field is empty, QuickSet Screen – Exam/QuickSet name is used.
SR Document Series	Modality	(0008,0060)	Always set to "SR"
	Series Instance UID	(0020,000E)	Generated by X Family system
	Series Number	(0020,0011)	Series Number in study (2-n).
	Series Date	(0008,0021)	Date the series started.
	Series Time	(0008,0031)	Time the series started.
	Referenced Performed Procedure Step Sequence	(0008,1111)	Populated with MPPS SOP Class UID and MPPS SOP instance UID of MPPS command sent for the procedure step(s) performed.
General Equipment	Manufacturer	(0008,0070)	Set to "SIEMENS"
	Institution Name	(0008,0080)	System Presets – Organization Name field.
	Software Versions	(0018,1020)	Set to "SR1.0_<DICOM Software Version>_<Product Name>" where <Product Name> and <DICOM Software Version> are specific to each X Family Ultrasound System release.
	Manufacturer's Model Name	(0008,1090)	Set to "ACUSON X Family"
SR Document General	Content Date	(0008,0023)	Date the report was created
	Content Time	(0008,0033)	Time the report was created
	Instance Number	(0020,0013)	Always set to 0.
	Completion Flag	(0040,A491)	Always set to "PARTIAL"

Module	Attribute	Tag	Notes
	Verification Flag	(0040,A493)	Always set to “UNVERIFIED”
	Predecessor Documents Sequence	(0040,A360)	Supplied if a previous SR was generated for the study. Populated with SOP Class UID and SOP Instance UID of the previous Obstetric SRs for the study, if any. See table C17-2 in PS 3.3-2011 for sequence definition.
	Performed Procedure Code Sequence	(0040,A372)	Populated with contents of Procedure Code Sequence from Modality Worklist if available, empty otherwise. See table C17-2 in PS 3.3-2011 for sequence definition.
	Current Requested Procedure Evidence Sequence	(0040,A375)	Lists all images and clips in the study. See table C17-2 in PS 3.3-2011for sequence definition.
SOP Common	SOP Class UID	(0008,0016)	1.2.840.10008.5.1.4.1.1.88.33
	SOP Instance UID	(0008,0018)	Generated by X Family system.
	Specific Character Set	(0008,0005)	Set to values as defined in Section 7.4 of this document.
	Instance Creation Date	(0008,0012)	Date the SOP Instance was created.
	Instance Creation Time	(0008,0013)	Time the SOP Instance was created.
	Instance Creator UID	(0008,0014)	
Private Attributes	Private Creator	(0019,0010)	Reserves tags 0019,1000 through 0019,10FF for use as private tags.
	Import Structured Reports	(0019,1020)	Set to “O” or “C” or “CO” if SR options were purchased and SR generation was configured. Otherwise set to “No”. Instructs SCP that it should attempt to import measurements from SR.

Error Handling

The following table indicates the response status codes that are handled by the ACUSON X Family AE, which a SCP may return following the SCU’s C-STORE-RSP command.

A successful C-STORE operation will allow the ACUSON X Family AE to continue to the next action desired by the user.

Service Status	Further Meaning	Protocol Codes	Related Fields
Refused	Out of resources.	A7xx	None
Error	Data set does not match SOP Class. Cannot understand.	A9xx Cxxx	None
Warning	Coercion of data Elements. Data set does not match SOP Class. Elements discarded.	B000 B007 B006	None
Success		0000	None

If the C-STORE operation is not successful, the image(s) and Structured Report(s), if any, are spooled on the ACUSON X Family system hard drive. A user-configured number of additional attempts are made to

store the image(s) and Structured Report(s). If these attempts fail, the user must select the job and press "Retry Job" on the Store Status page to complete the C-STORE operation.

All image and Structured Report storage on the ACUSON X Family system hard drive is temporary in nature. If an attempt is made to store images on a full ACUSON X Family system hard drive, the system will attempt to delete studies archived to CD or DICOM. If no delete able data exists, a "DISK FULL" message is displayed on the ACUSON X Family system display. The user must then delete studies not archived in order to store additional images.

4.2.3.3 Real-World Activity – Storage Commitment

This operation allows the AE to create an instance of the Storage Commitment SOP Class and to provide information about a specific Real World Activity that is under the control of the SCU. The AE invokes a request for safekeeping of images by the N-ACTION REQUEST. Referenced in the N-ACTION Request are the SOP class UID(s) and SOP instance UID(s) for all STORE Class objects requesting commitment by the SCU.

Storage Commit

The Storage Commitment (if enabled) command is sent in the following situations:

a. On series close, when all images and Structured Reports have previously stored successfully.

b. The series was previously closed, all previous stores have succeeded and the last image or Structured Report stores successfully.

c. The series was previously closed, at least one store has succeeded, at least one store has failed and the last store with non-zero retry count fails or succeeds.

d. A series has been partially committed as in c. Later, due to "Retry Job" button press on the Store Status UI screen the store jobs are retried. Another Storage Commit is sent when at least one store has succeeded and the last store with non-zero retry count fails or succeeds.

The ACUSON X Family system waits for the return of a successful N-ACTION RESPONSE Status Code applicable for the associated request indicating whether the commitment request was successful or a failure. The ACUSON X Family system waits for the N-EVENT REPORT from the SCP for at most 48 hours. The ACUSON X Family system is capable of accepting the N-EVENT REPORT on the association it initiates for the N-ACTION or one initiated by the SCP. Studies with all SOP instances marked as 'successful' in the N-EVENT REPORT will be eligible for deletion from the system hard drive.

The ACUSON X Family system allows the user to configure a Storage Commitment Server which may be different from the Storage Server. Thus, the Storage Commitment SCP must wait for an appropriate time for the stored images to arrive from the Storage server.

Image-By-Image and Batch Storage Commitment are supported as specified in "Vista DICOM Conformance Requirements for Image Modalities in radiology, Cardiology, Dental, Ophthalmology and other specialities" (Version 2.3).

Storage Commitment of Structured Reports is supported.

Proposed Presentation Context

Abstract Syntax		Transfer Syntax		Role	Extended Negotiation
Name	UID	Name List	UID List		
Storage Commitment Push Model	1.2.840.10008.1.20.1	Implicit VR Little Endian	1.2.840.10008.1.2	SCU	None

The ACUSON X Family system will act as an SCU in the 'Push Model" Storage Commitment SOP Class.

SOP Specific Conformance to Storage Commitment SOP Class

The Storage Commitment AE provides conformance to the following DICOM Service SOP Class as an SCU at a standard level of conformance.

Supported SOP Class Name	SOP Class UID	Conformance Level
Storage Commitment Push Model	1.2.840.10008.1.20.1	Standard

Storage Commitment to Storage Media (CD) is not supported.

The following table provides the list of attributes supported by the AE in the implementation of Storage Commitment SOP Class:

Attribute	Tag	Notes
Transaction UID	(0008,1195)	Generated by X Family system
Referenced SOP Sequence	(0008,1199)	
>Referenced SOP Class UID	(0008,1150)	
>Referenced SOP Instance UID	(0008,1155)	

Error Handling

If the storage commitment operation is not successful, a user-configured number of additional attempts are made. If these attempts fail, the user must select the job and press “Retry Job” on the DICOM Store Queue page to complete the storage commitment operation

4.2.3.4 Real World Activity – Modality Worklist

A separate Network association is established by the AE for each Worklist query operation, with only one active query at a time. The association is closed at completion of the query.

Proposed Presentation Context

Abstract Syntax		Transfer Syntax		Role	Extended Negotiation
Name	UID	Name List	UID List		
Modality Worklist Information Model - FIND	1.2.840.10008.5.1.4.31	Implicit VR Little Endian	1.2.840.10008.1.2	SCU	None

The ACUSON X Family system will always act as an SCU and as the client in a client-server model.

SOP Specific Conformance to Modality Worklist Service SOP Classes

The Worklist AE provides conformance to the following DICOM Service SOP Classes as an SCU all at a standard extended level of conformance:

Supported SOP Class Name	SOP Class UID	Conformance Level
Modality Worklist Information Model - FIND	1.2.840.10008.5.1.4.31	Standard Extended

The following table provides the list of attributes requested in the Modality Worklist Query.

Attribute Name	Tag
Specific Character Set	(0008,0005)
Accession number	(0008,0050)*

Attribute Name	Tag
Referring Physician's Name	(0008,0090)
Study Description	(0008,1030)
Admitting Diagnoses Description	(0008,1030)
Referenced Study Sequence	(0008,1110)
>Referenced SOP Class UID	(0008,1150)
>Referenced SOP Instance UID	(0008,1155)
Patient's Name	(0010,0010)*
Patient ID	(0010,0020)*
Patient's Birth Date	(0010,0030)
Patient's Sex	(0010,0040)
Patient's Size	(0010,1020)
Patient's Weight	(0010,1030)
Medical Alerts	(0010,2000)
Contrast Allergies	(0010,2110)
Pregnancy Status	(0010,21C0)
Last Menstrual Date	(0010,21D0)
Patient Comments	(0010,4000)
Study Instance UID	(0020,000D)
Requesting Physician	(0032,1032)
Requested Procedure Description	(0032,1060)
Requested Procedure Code Sequence	(0040,0008)
>Code Value	(0008,0100)
>Coding Scheme Designator	(0008,0102)
>Coding Scheme Version	(0008,0103)
>Code Meaning	(0008,0104)
Special Needs	(0038,0050)
Patient State	(0038,0500)
Scheduled Procedure Step Sequence	(0040,0100)
>Modality	(0008,0060)
>Scheduled Station AE Title	(0040,0001)*
>Scheduled Procedure Step Start Date	(0040,0002)
>Scheduled Procedure Step Start Time	(0040,0003)
>Scheduled Performing Physician's Name	(0040,0006)
>Scheduled Procedure Step Description	(0040,0007)
>Scheduled Protocol Code Sequence	(0040,0008)
>>Code Value	(0008,0100)
>>Coding Scheme Designator	(0008,0102)
>>Coding Scheme Version	(0008,0103)
>>Code Meaning	(0008,0104)
>Scheduled Procedure Step ID	(0040,0009)
>Comments on the Scheduled Procedure Step	(0040,0400)

Attribute Name	Tag
Requested Procedure ID	(0040,1001)*
Reason for the Requested Procedure	(0040,1002)

*Indicates parameter may be populated for query.

4.2.3.5 Real World Activity – Modality Performed Procedure Step

This operation allows the AE to create an instance of the Modality Performed Procedure Step SOP Class (MPPS) and provide information about a specific real world Performed Procedure Step that is under control of the SCU. This operation is invoked through the DIMSE N-CREATE and N-SET services.

The ACUSON X Family system conforms to the IHE Scheduled Workflow use case.

A list of scheduled procedures and procedure steps will be accessible from the Worklist and Procedure screens. The Performed Procedure Step User Interface allows the operator to set the status of the performed procedure step. The system shall establish an association for N-CREATE and N-SET, if another N-CREATE or N-SET is available within 5 seconds, it will be sent using the same association.

Starting a Performed Procedure Step

When the user depresses the 'OK' button on the New Patient Screen a performed procedure SOP Class instance will be created using the N-CREATE DIMSE service for the selected scheduled procedure.

Ending a Performed Procedure Step

When the user selects 'Completed' or 'Discontinued' from the MPPS User Interface, the performed procedure step will be closed using the N-SET DIMSE service.

New Patient Request

If the 'New Patient' button is selected and there are opened performed procedure steps, the user shall be prompted for a closure status for the opened procedure step by the MPPS User Interface. Any opened procedure steps must be closed before any 'new patient' data can be entered.

System Shutdown

If the user requests 'System Shutdown' and there is an open performed procedure step, the user will be prompted for a closure status for the open procedure step. All procedure steps should be closed before the system can be shutdown. Failure to close a procedure step will result in the procedure step being set to Discontinued.

Error Handling

If the MPPS operation is not successful, the MPPS command is spooled on the ACUSON X Family system hard drive. A user-configured number of additional attempts are made to complete the MPPS Commands. If these attempts fail, the user must select this job and press "Retry Job" on the Store Status page to complete the MPPS operation.

Proposed Presentation Context

Abstract Syntax		Transfer Syntax		Role	Extended Negotiation
Name	UID	Name List	UID List		
Modality Performed Procedure Step	1.2.840.10008.3.1.2.3.3	Implicit VR Little Endian	1.2.840.10008.1.2	SCU	None

The ACUSON X Family system will always act as an SCU and be the client in a client – server model.

SOP Specific Conformance to Modality Performed Procedure Step SOP Classes

The Modality Performed Procedure Step AE provides a conforming implementation of the following DICOM Service SOP Class as an SCU at a standard extended level of conformance.

Supported SOP Class Name	SOP Class UID	Conformance Level
Modality Performed Procedure Step	1.2.840.10008.3.1.2.3.3	Standard Extended

The following tables provide the list of attributes supported by the AE in the implementation of MPPS SOP Class including N-CREATE, N-SET and Final State attributes. The ACUSON X Family system sends N-SET only at final state.

Attribute	Tag	Notes
Specific Character Set	(0008,0005)	Created from values as defined in Section 7.4 of this document or as received from MWL
Scheduled Step Attribute Sequence	(0040,0270)	
>Study Instance UID	(0020,000D)	Value obtained from Modality WorkList; generated by X Family system in some cases
>Referenced Study Sequence	(0008,1110)	Populated with contents of Referenced Study Sequence from Modality Worklist if used, created otherwise. See table F.7.2-1 in PS 3.4-2011 for sequence definition.
>>Referenced SOP Class UID	(0008,1150)	Populated with contents of Referenced Study Sequence from Modality Worklist if used, created otherwise. See table F.7.2-1 in PS 3.4-2011 for sequence definition.
>>Referenced SOP Instance UID	(0008,1155)	Populated with contents of Referenced Study Sequence from Modality Worklist if used, created otherwise. See table F.7.2-1 in PS 3.4-2011 for sequence definition.
>Accession Number	(0008,0050)	Value obtained from Modality WorkList or user input
>Requested Procedure ID	(0040,1001)	Value obtained from Modality WorkList or created
>Requested Procedure Description	(0032,1060)	From Modality WorkList or zero length
>Scheduled Procedure Step ID	(0040,0009)	From Modality WorkList or zero length
>Scheduled Procedure Step Description	(0040,0007)	From Modality WorkList or zero length
>Scheduled Protocol Code Sequence	(0040,0008)	From Modality WorkList or zero length
>>Code Value	(0008,0100)	
>>Coding Scheme Designator	(0008,0102)	
>>Coding Scheme Version	(0008,0103)	
>>Code Meaning	(0008,0104)	Value obtained from Modality WorkList
Patient's Name	(0010,0010)	Value obtained from Modality WorkList or user input

Attribute	Tag	Notes
Patient ID	(0010,0020)	Value obtained from Modality WorkList or user input
Patient's Birth Date	(0010,0030)	Value obtained from Modality WorkList or user input
Patient's Sex	(0010,0040)	Value obtained from Modality WorkList or user input
Referenced Patient Sequence	(0008,1120)	Zero length
>Referenced SOP Class UID	(0008,1150)	
>Referenced Instance UID	(0008,1155)	
Performed Station Name	(0040,0242)	Own hostname
Performed Location	(0040,0243)	From institution name
Performed Procedure Step Start Date	(0040,0244)	The start date of the performed procedure step.
Performed Procedure Step Start Time	(0040,0245)	The start time of the performed procedure step.
Performed Procedure Step Status	(0040,0252)	Always set to "In-Progress".
Performed Procedure Step Description	(0040,0254)	Value obtained from Modality WorkList or sent as zero length
Performed Procedure Type Description	(0040,0255)	sent as zero length
Procedure Code Sequence	(0008,1032)	Populated with contents of Requested Procedure Code Sequence from Modality Worklist if used, empty otherwise. See table F.7.2-1 in PS 3.4-2011 for sequence definition.
>Code Value	(0008,0100)	-
>Coding Scheme Designator	(0008,0102)	-
>Coding Scheme Version	(0008,0103)	-
>Code Meaning	(0008,0104)	-
Performed Procedure Step End Date	(0040,0250)	Always sent as 0 length attribute
Performed Procedure Step End Time	(0040,0251)	Always sent as 0 length attribute
Modality	(0008,0060)	Always set to US
Study ID	(0020,0010)	Populated from Requested Procedure ID (0040,1001) if Modality Worklist is used; created by X Family system otherwise
Performed Protocol Code Sequence	(0040,0260)	Obtained from Scheduled Action Item Code Sequence (MWL query) or sent as zero length
Performed Series Sequence	(0040,0340)	Always empty
Performed Series Sequence	(0040,0340)	
>Performing Physician's Name	(0008,1050)	From MWL or user input
>Protocol Name	(0018,1030)	Set to exam type
>Operators' Name	(0008,1070)	Zero length
>Series Instance UID	(0020,000E)	Created

Attribute	Tag	Notes
>Series Description	(0008,103E)	Zero length
>Retrieve AE Title	(0008,0054)	Zero length
>Referenced Image Sequence	(0008,1140)	Zero length
>>Referenced SOP Class UID	(0008,1150)	-
>>Referenced SOP Instance UID	(0008,1155)	-
>Referenced Standalone SOP Instance Sequence	(0040,0220)	Zero length

Attribute	Tag	Notes
Performed Procedure Step Status	(0040,0252)	Set to “Discontinued” or “Completed” based on user selection.
Performed Procedure Step End Date	(0040,0250)	Date the procedure step was completed
Performed Procedure Step End Time	(0040,0251)	Time the procedure step was completed
Performed Action Item Code Sequence	(0040,0260)	From Scheduled Action Item Code Sequence
>Code Value	(0008,0100)	
>Coding Scheme Designator	(0008,0102)	
>Coding Scheme Version	(0008,0103)	
>Code Meaning	(0008,0104)	
Performed Series Sequence	(0040,0340)	Shall contain only one series
>Performing Physician’s Name	(0008,1050)	Zero length
>Protocol Name	(0008,1030)	Exam type specified by the operator.
>Operator’s Name	(0008,1070)	Zero length
>Series Instance UID	(0020,000E)	The Instance UID of the series to which the procedure belongs.
>Series Description	(0008,103E)	Always sent as 0 length attribute
>Retrieve AE Title	(0008,0054)	Always sent as 0 length attribute
>Referenced Image Sequence	(0008,1140)	List of all the images in the series.
>>Referenced SOP Class UID	(0008,1150)	The SOP class UID can be one of: Ultrasound Multi-Frame Image Storage 1.2.840.10008.5.1.4.1.1.3.1 Ultrasound Multi-Frame Image Storage (Retired) 1.2.840.10008.5.1.4.1.1.3 Ultrasound Image Storage 1.2.840.10008.5.1.4.1.1.6.1 Ultrasound Image Storage (Retired) 1.2.840.10008.5.1.4.1.1.6 Secondary Capture Image Storage 1.2.840.10008.5.1.4.1.1.7
>>Referenced SOP Instance UID	(0008,1155)	The SOP instance UID of the image.
> Referenced Standalone SOP Instance Sequence	(0040,0220)	Always empty

4.2.3.6 Real World Activity – Query / Retrieve

The query user interface will request the query-data from user and triggers one C-FIND request to the selected remote node. The response data will be displayed in the query UI for further data navigation.

When requesting Import of related items the browser requests the retrieve application to send a C-MOVE request to the related remote node. Images will then be received by the Storage SCP as described in the related section.

4.2.3.6.1 Real World Activity - Find SCU

Associated Real-World Activity - Find SCU "Search"

The associated Real-World activity is to fill out a query form with search data and pass it as query to the network application which issues a C-FIND over a previously built association. The remote SCP will respond with related data-entries that will be passed to a browser application. When data transfer is finished the association is closed.

Proposed Presentation Contexts - Find SCU

The ACUSON X Family system DICOM application will propose Presentation Contexts as shown in the following table.

Abstract Syntax		Transfer Syntax		Role	Extended Negotiation
Name	**UID**	**Name**	**UID**		
Study Root Query/Retrieve Model – FIND	1.2.840.10008.5.1.4.1.2.2.1	Implicit VR Little Endian Explicit VR Little Endian Explicit VR Big Endian	1.2.840.10008.1.2 1.2.840.10008.1.2.1 1.2.840.10008.1.2.2	SCU	None

The C-FIND SCU will use the Study Root Model for all C-FIND requests.

SOP Specific Conformance - Find SCU

The ACUSON X Family system DICOM Query/Retrieve SCU supports hierarchical queries with all mandatory search keys. The interactive querying of attributes on IMAGE level is not supported by the Query SCU. Though, retrieval of individual Objects is possible. The following table describes the search keys for the different query models that the SCU supports. Matching is either wildcard, which means that the user can supply a string containing wildcards, or universal, which means that the attribute is requested as return value.

Attribute Name	Tag	Type	Matching	User Input	Return Value Display
Study Level					
Patient Name	(0010,0010)	R	Wildcard[(a)]	enter value	yes
Patient ID	(0010,0020)	R	Wildcard[(a)]	enter value	yes
Patient's Birth date	(0010,0030)	O	universal (Null)		yes
Patient's Sex	(0010,0040)	O	universal (Null)	enter value	yes
Study Instance UID	(0020,000D)	U	universal (Null)		no
Study ID	(0020,0010)	R	universal (Null)		yes

Attribute Name	Tag	Type	Matching	User Input	Return Value Display
Study Date	(0008,0020)	R	universal (Null)	enter value	yes
Study Time	(0008,0030)	R	universal (Null)	-	yes
Accession Number	(0008,0050)	R	universal (Null)	enter value	yes
Study Description	(0008,1030)	O	universal (Null)		yes
Referring Physician's Name	(0008,0090)	O	universal (Null)	enter value	yes
Name of Physician Reading Study	(0008,1060)	O	universal (Null)		yes
Modalities in Study	(0008,0061)	O	universal (Null)	enter value	yes
Storage Media File-Set ID	(0008,0130)	O	universal (Null)		no
Retrieve AE Title	(0008,0054)	O	universal (Null)		no
Number of Study related Series	(0020,1206)	O	universal (Null)		yes[a]
Number of Study related Instances	(0020,1208)	O	universal (Null)		no
Series Level					
Series Instance UID	(0020,000E)	U	universal (Null)		no
Series Number	(0020,0011)	R	universal (Null)		yes
Modality	(0008,0060)	R	universal (Null)	enter value	yes
Series Description	(0008,103E)	O	universal (Null)	enter value	yes
Body Part Examined	(0018,0015)	O	universal (Null)	enter value	yes
Performing Physician	(0008,1050)	O	universal (Null)	enter value	yes
Storage Media File-Set ID	(0008,0130)	O	universal (Null)		yes
Retrieve AE Title	(0008,0054)	O	universal (Null)		yes
Protocol Name	(0018,1030)	O	universal (Null)		no
Perf. Procedure Step Start Date	(0040,0244)	O	universal (Null)		yes
Perf. Procedure Step Start Time	(0040,0245)	O	universal (Null)		yes
Requested Attribute Sequence	(0040,0275)	O	universal (Null)		yes
> Requested Procedure ID	(0040,1001)	O	universal (Null)		yes
> Scheduled Procedure ID	(0040,0009)	O	universal (Null)		yes
Number of Series related Instances	(0020,1209)	O	universal (Null)		yes
Image Level					
SOP Instance UID	(0008,0018)	U	single value		no
Image Number	(0020,0013)	R	universal (Null)		yes
Storage Media File-Set ID	(0008,0130)	O	universal (Null)		no
Retrieve AE Title	(0008,0054)	O	universal (Null)		no
Instance Date	(0008,0023)	O	universal (Null)		no
Instance Time	(0008,0033)	O	universal (Null)		no

Attribute Name	Tag	Type	Matching	User Input	Return Value Display
Number of Frames	(0028,0008)	O	universal (Null)		yes
Content Date	(0008,0023)	O	single value, range matching, universal	enter value	yes
Content Time	(0008,0033)	O	single value, range matching, universal	enter value	yes
Referenced Request Sequence	(0040,A370)	O	sequence matching		yes
>Accession Number	0008,0050)	O	single value, universal		yes
>Requested Procedure ID	(0040,1000)	O	single value, universal		yes
Concept Name Code Sequence	(0040,A043)	O	sequence matching	enter value	yes
>Code Value	(0008,0100)	O	single value, universal, wildcard		yes
>Coding Scheme Designator	(0008,0102)	O	single value, universal, wildcard		yes
>Coding Scheme Version	(0008,0103)	O	single value, universal, wildcard		yes
>Code Meaning	(0008,0104)	O	single value, universal, wildcard		yes
Template Identifier	(0040,DB00)	O	single value, universal, wildcard		yes
Completion Flag	(0040,A491)	O	single value, universal, wildcard	enter value	yes
Verification Flag	(0040,A493)	O	single value, universal, wildcard	enter value	yes
Verifying Observer Sequence	(0040,A073)	O	sequence matching	enter value	yes
>Verifying Organization	(0040,A027)	O	single value, universal, wildcard		yes
>Verifying DateTime	(0040,A030)	O	single value, range matching, universal	enter value	yes
>Verifying Observer Name	(0040,A075)	O	single value, universal, wildcard	enter value	yes
>Verifying Observer Identification Code Sequence	(0040,A088)	O	sequence matching		yes

Attribute Name	Tag	Type	Matching	User Input	Return Value Display
>>Code Value	(0008,0100)	O	single value, universal, wildcard		yes
>>Coding Scheme Designator	(0008,0102)	O	single value, universal, wildcard		yes
>>Coding Scheme Version	(0008,0103)	O	single value, universal, wildcard		yes
>>Code Meaning	(0008,0104)	O	single value, universal, wildcard		yes

Note:
(a) A '*" is always appended to the user-supplied string

Error Handling

Service Status	Meaning	Protocol Codes	Related Fields
Refused	Out of Resources	A700	(0000,0902)
Failed	Identifier does not match SOP Class	A900	(0000,0901) (0000,0902)
	Unable to process	CXX	(0000,0901) (0000,0902)
Cancel	Matching terminated due to Cancel request	FE00	None
Success	Matching is complete - No final Identifier is supplied	0000	None
Pending	Matches are continuing - Current Match is supplied and any Optional Keys were supported in the same manner as Required Keys	FF00	Identifier
	Matches are continuing - Warning that one or more Optional Keys were not supported for existence and/or matching for this identifier	FF01	Identifier

4.2.3.6.2 Real-World Activity – Move SCU

Associated Real-World Activity - Move SCU "Import"

When an entry is selected in the Query UI and activate the "Import" function, a retrieval request is passed via a C-MOVE service according to the Patient Root or Study Root query model.

C-MOVE operation on Patient Level is not supported by the Query UI.

Proposed Presentation Contexts - Move SCU

The ACUSON X Family system DICOM application will propose Presentation Contexts as shown in the following table.

Abstract Syntax		Transfer Syntax		Role	Extended Negotiation
Name	UID	Name	UID		
Study Root Query/Retrieve Model – MOVE	1.2.840.10008.5.1.4.1.2.2.2	Implicit VR Little Endian Explicit VR Little Endian Explicit VR Big Endian	1.2.840.10008.1.2 1.2.840.10008.1.2.1 1.2.840.10008.1.2.2	SCU	None

SOP Specific Conformance - Move SCU "Import"

At association establishment the C-MOVE presentation context shall be negotiated. The C-STORE sub-operations must be done on a different association to transfer images to the Storage Service Class SCP.

The Move SCU interprets following status codes.

Service Status	Meaning	Protocol Codes	Related Fields
Failed	Identifier does not match SOP Class	A900	(0000,0901) (0000,0902)
	Unable to process	CXX	(0000,0901) (0000,0902)
Success	Matching is complete - No final Identifier is supplied	0000	None
Pending	Matches are continuing - Current Match is supplied and any Optional Keys were supported in the same manner as Required Keys	FF00	Identifier

4.2.3.7 Real World Activity – Print

ACUSON X Family system facilitates user to print images as they are being created or later in review mode.

Paging images during acquisition

One or more of "Print/Store 1" and "Print/Store 2" keys on the control panel can be configured for Print (DICOM B/W Print and/or DICOM Color Print). When the user presses one of the configured keys on the control panel, the image is acquired, stored on the hard disk and placed in a page under the respective printer layout (DICOM B/W Printer Layout or DICOM Color Printer Layout).

Paging images in Review mode

User can select either individual images from open or closed studies, or one or more closed studies and queue them up for print. DICOM B/W Printer and DICOM Color Printer buttons are available in Patient browser for this operation. When a study is selected for print, all single-frame images belonging to the study will be printed.

Transfer of pages to the Printer

Pages may be immediately transferred or delayed till the end of study using the transfer configuration.

ACUSON X Family system supports two configurations: “Print At End of Exam” and “Print When Page Is Full”.

If the configuration is set to “Print At End of Exam”, all pages queued to destination devices will be transferred as a batch when the user selects “Close Study” or “New Patient”.

If the configuration is set to “Print When Page Is Full”, a page is transferred to destination devices immediately after it is full.

For both “Print At End of Exam”, and “Print When Page Is Full” settings, image transfer will be delayed if the ACUSON X Family system is busy performing another DICOM Command (Store/Print/Echo).

Associated Real World Activities

An association is established when the user initiates a “B/W Print” or “Color Print” operation from the Patient browser. Individual images or entire exams can be transferred to the selected DICOM Print device. The association is closed no pages are available to be printed for five seconds. An association may also be opened after a network outage or when the system is powered-on if images are queued to be printed.

Proposed Presentation Context to a Grayscale Print Server

Abstract Syntax		Transfer Syntax		Role	Extended Negotiation
Name	UID	Name List	UID List		
Basic Grayscale Print Management Meta SOP Class	1.2.840.10008.5.1.1.9	DICOM Explicit VR Little Endian	1.2.840.10008.1.2.1	SCU	None
Basic Grayscale Print Management Meta SOP Class	1.2.840.10008.5.1.1.9	DICOM Implicit VR Little Endian	1.2.840.10008.1.2	SCU	None

SOP Specific Conformance to Basic Grayscale Print Management Meta SOP Class

The ACUSON X Family AE provides standard conformance of the Grayscale Meta SOP classes as an SCU. Specifically, with respect to the Basic Grayscale Print Management Meta SOP Class this means conformance to the underlying SOP classes:

SOP Class Name	SOP Class UID	Conformance Level
Basic Film Session SOP Class	1.2.840.10008.5.1.1.1	Standard
Basic Film Box SOP Class	1.2.840.10008.5.1.1.2	Standard
Basic Grayscale Image Box SOP Class	1.2.840.10008.5.1.1.4	Standard
Printer SOP Class	1.2.840.10008.5.1.1.16	Standard

All mandatory elements of these classes are supported.

Specific Conformance to Basic Film Session SOP Class

DICOM specified usage - M = Mandatory; U = User Option

Name	Usage	Description
N-Create	M	Creates the Film Session.
N-Set	U	Not used.
N-Delete	U	Deletes the Film Session.

N-Action	U	Not used.

SOP Specific Conformance to Basic Film Box SOP Class

Name	Usage	Description
N-Create	M	Creates the Film Box.
N-Set	U	Not used.
N-Delete	U	Deletes the Film Box. Issued after each film is printed.
N-Action	M	PRINT. Sent after each Film Box is filled, and at the end of the exam to force a print of partially filled Film Box.

Attribute Name	Attribute Tag	Usage	Range	Description
Image Display Format	(2010,0010)	M	STANDARD\ X,Y	Where X, Y can be configured/ selected as 1*1, 1*2, 2*2, 2*3, 3*2, 3*3, 3*5, 4*5, 4*6, 5*6
Film Orientation	(2010,0040)	U	PORTRAIT LANDSCAPE	Range may be limited by print server/printer.
Film Size ID	(2010,0050)	U	8INX10IN 8.5INX11IN 10INX12IN 10INX14IN 11INX14IN 11INX17IN 14INX14IN 14INX17IN 24CMX24CM 24CMX30CM A3 A4	Range may be limited by print server/printer.
Magnification Type	(2010,0060)	U	REPLICATE BILINEAR CUBIC NONE	
Min. Density	(2010,0120)	U	0-99,999,999	Printer specific
Max Density	(2010,0130)	U	0-99,999,999	Printer specific
Configuration Information	(2010,0150)	U		Printer specific
Smoothing Type	(2010,0080)	U		Printer specific
Border Density	(2010,0100)	U	BLACK WHITE	
Empty Image Density	(2010,0110)	U	BLACK WHITE	
Trim	(2010,0140)	U	YES NO	

SOP Specific Conformance to Basic Grayscale Image Box SOP Class

Name	Usage	Description
N-Set	M	The SCP for each potential image of the film box creates an image box instance. Only those instances, which actually contain images, will be updated with the N-SET message.

Name	Attribute	Range	Description
Image Position	(2020,0010)	1-30	Value according to Image Display Format
Polarity	(2020,0020)	NORMAL, REVERSE	Intensity mapping between display and print

Name	Usage	Description
N-Event-Report	M	Ignored and not handled.
N-Get	U	May be issued by this device at any time to get printer status.

Name	Usage	Range	Description
Printer Status	U	WARNING FAILURE	During a “Failure”, the Print job will be displayed as “Failed”.
Printer Status Information	U	Vendor specific	Reported to user if printer status = WARNING or FAILURE.

Proposed Presentation Context to a Color Print Server

Abstract Syntax		Transfer Syntax		Role	Extended Negotiation
Name	UID	Name List	UID List		
Basic Color Print Management Meta SOP Class	1.2.840.10008.5.1.1.18	DICOM Explicit VR Little Endian	1.2.840.10008.1.2.1	SCU	None
Basic Color Print Management Meta SOP Class	1.2.840.10008.5.1.1.18	DICOM Implicit VR Little Endian	1.2.840.10008.1.2	SCU	None

SOP Specific Conformance to Basic Color Print Management Meta SOP Class

The ACUSON X Family Print AE provides standard conformance to the color printing Meta SOP classes as an SCU. Specifically, with respect to the Basic Color Print Management Meta SOP Class this means conformance to the underlying SOP classes:

SOP Class Name	SOP Class UID	Conformance Level
Basic Film Session SOP Class	1.2.840.10008.5.1.1.1	Standard
Basic Film Box SOP Class	1.2.840.10008.5.1.1.2	Standard
Basic Color Image Box SOP Class	1.2.840.10008.5.1.1.4.1	Standard
Printer SOP Class	1.2.840.10008.5.1.1.16	Standard

SOP Specific Conformance to Basic Color Image Box SOP Class

The Basic Color Print Management Meta SOP Class makes identical use of the *Basic Film Session SOP Class, Basic Film Box SOP Class* and *Printer SOP Class* elements, which have been previously described for grayscale image printing. Therefore, these will not be described again in this section on color printing. However, it should be noted that certain attributes, such as Medium Type which is defined in the Basic Film Session SOP Class, are highly likely to require printer/print server specific media.

Name	Usage	Description
N-Set	M	The SCP for each potential image of the film box creates an image box instance. Only those instances, which actually contain images, will be updated with the N-SET message.

Name	Attribute	Range	Description
Planar Configuration	(0028,0006)	0 – color by pixel 1 – color by plane	Color by plane. Color frame pixel order is configured as a planar image. Set to 0 (color by pixel) for RBG pixel-ordered image, 1 (color by plane) for planar image. Required when Samples per Pixel has a value greater than 1.

The Printer SOP Class behavior is identical to that used for grayscale printing.

Error Handling

The ACUSON X Family Print AE supports the following error codes and reports failures to the user.

Service Status	Further Meaning	Protocol Codes
Success	Film accepted for Printing	0000
Warning	Film accepted for Printing, one or more settings ignored.	107,116,B600,B605
Failure	Printing not successful	C602, C603, C613

If the print operation is not successful, the image(s) are spooled on the ACUSON X Family system hard drive. A user-configured number of additional attempts are made to print the image(s). If these attempts fail, the user must select the job and press “Retry Job” on the Print Status page to complete the print operation.

5 REMOVABLE MEDIA INTERCHANGE SPECIFICATIONS

This implementation supports 120mm CD and DVD medium.

5.1 Supported Application Profiles

ACUSON X Family system provides standard conformance to the following four Ultrasound Application Profiles. A DICOM 3.0 conformant DICOMDIR file is created together with the directory structures and image files.

Supported AP	Real-World Activity	Roles	SC Option
STD-US-ID-SF-CDR	Create CD-R	FSC, FSR	Interchange
STD-US-ID-MF-CDR	Create CD-R	FSC, FSR	Interchange
STD-US-SC-SF-CDR	Create CD-R	FSC	Interchange
STS-US-SC-MF-CDR	Create CD-R	FSC	Interchange
STD-US-ID-SF-DVD	Create DVD	FSC, FSR	Interchange
STD-US-ID-MF-DVD	Create DVD	FSC, FSR	Interchange
STD-US-SC-SF-DVD	Create DVD	FSC	Interchange
STS-US-SC-MF-DVD	Create DVD	FSC	Interchange

5.2 Supported SOP Classes

5.2.1 Supported SOP Classes and Transfer Syntaxes

This implementation provides standard conformance to the following DICOM 3.0 SOP Classes.

Service SOP Class Name	SOP Class UID	Transfer Syntax Name	Transfer Syntax UID List
Ultrasound Image Storage	1.2.840.10008.5.1.4.1.1.6.1	DICOM Explicit VR Little Endian	1.2.840.10008.1.2.1
Ultrasound Multi-Frame Image Storage	1.2.840.10008.5.1.4.1.1.3.1	Lossy JPEG 8 Bit Image Compression	1.2.840.10008.1.2.4.50
Comprehensive SR	1.2.840.10008.5.1.4.1.1.88.33	DICOM Explicit VR Little Endian	1.2.840.10008.1.2.1

5.3 Information Object Definition and DICOMDIR Keys

5.3.1 DICOM File Meta Information

The following table denotes the attributes included in the Ultrasound Image Object as implemented on the ACUSON X Family system in addition to the attributes listed in Table 8: .

(Refer to Table 8: for additional attributes used)

Attribute Name	Tag	Notes
File Preamble	No Tag or Length fields	All bytes are set to 00H
DICOM Prefix	No Tag or Length fields	Set to DICOM Prefix “DICM”
Group length	(0002,0000)	

Attribute Name	Tag	Notes
File Meta Information Version	(0002,0001)	Always set to 0001H
Media Storage SOP Class UID	(0002,0002)	Always Ultrasound Image 1.2.840.10008.5.1.4.1.1.6.1
Media Storage SOP Instance UID	(0002,0003)	
Transfer Syntax UID	(0002,0010)	Always Explicit VR Little Endian 1.2.840.10008.1.2.1
Implementation Class UID	(0002,0012)	Always set to 1.3.12.2.1107.5.5.5
Implementation Version Name	(0002,0013)	Always set to MergeCOM3_370

The following table denotes the attributes included in the Ultrasound Multi-Frame Image Object as implemented on the ACUSON X Family system in addition to the attributes listed in Table 9: .

(Refer to Table 9: for additional attributes used)

Attribute	Tag	Notes
File Preamble	No Tag or Length fields	All bytes are set to 0
DICOM Prefix	No Tag or Length fields	Set to “DICM”
Group length	(0002,0000)	
File Meta Information Version	(0002,0001)	Always set to 0001H
Media Storage SOP Class UID	(0002,0002)	Always Ultrasound Multi-Frame Image 1.2.840.10008.5.1.4.1.1.3.1
Media Storage SOP Instance UID	(0002,0003)	
Transfer Syntax UID	(0002,0010)	Always Lossy JPEG 8 Bit Compression 1.2.840.10008.1.2.4.50
Implementation Class UID	(0002,0012)	Always set to 1.3.12.2.1107.5.5.5
Implementation Version Name	(0002,0013)	Always set to MergeCOM3_370

The following table denotes the attributes included in the Comprehensive SR Object as implemented on the ACUSON X Family system in addition to the attributes listed in Table 13: .

(Refer to Table 13: for additional attributes used)

Attribute	Tag	Notes
File Preamble	No Tag or Length fields	All bytes are set to 0
DICOM Prefix	No Tag or Length fields	Set to “DICM”
Group length	(0002,0000)	
File Meta Information Version	(0002,0001)	Always set to 0001H
Media Storage SOP Class UID	(0002,0002)	Always Comprehensive SR 1.2.840.10008.5.1.4.1.1.88.33
Media Storage SOP Instance UID	(0002,0003)	
Transfer Syntax UID	(0002,0010)	Always Explicit VR Little Endian 1.2.840.10008.1.2.1
Implementation Class UID	(0002,0012)	Always set to 1.3.12.2.1107.5.5.5
Implementation Version Name	(0002,0013)	Always set to MergeCOM3_370

5.3.2 Basic Directory Information Object Definitions – File-set Identification Module

Attribute	Tag	Notes
File-Set ID	(0004,1130)	Set to serial number + YYMMDD + 3 digit counter. Volume Label has this same value.

5.3.3 Basic Directory Information Object Definitions – Directory Identification Module

Attribute	Tag	Notes
Offset of the First Directory Record of the Root Directory Entry	(0004,1200)	
Offset of the Last Directory Record of the Root Directory Entry	(0004,1202)	
File-set Consistency Flag	(0004,1212)	
Directory Record Sequence	(0004,1220)	
>Offset of the Next Directory Record	(0004,1400)	
>Record In-use Flag	(0004,1410)	
>Offset of Referenced Lower-Level Directory Entity	(0004,1420)	
>Directory Record Type	(0004,1430)	
>Referenced File ID	(0004,1500)	
>Referenced SOP Class UID in File	(0004,1510)	
>Referenced SOP Instance UID in File	(0004,1511)	

5.3.4 Physical Storage Media and Media Formats

The physical storage media supported are 120mm CD-R, CD-RW, DVD-R, DVD+R, DVD-RW, and DVD+RW medium.

6 COMMUNICATION PROFILES

All ACUSON X Family system application entities utilize the DICOM 3.0 TCP/IP communication support as defined in PS3.8 (Part 8) of the DICOM 3.0 Standard.

6.1 TCP/IP Stack Supported

Each process inherits its TCP/IP stack from the ACUSON X Family system's operating systems TCP/IP stack. The local AE Port number is always set to 104.

6.2 Physical Media Supported

Standard representations of IEEE 802.3 10BaseT/100BaseT ("twisted pair") is supported

6.3 Chapter Extensions/Specializations/Privatizations

Pixel Spacing information is only provided for single, full screen, and 2D image types (B-mode, B-mode with color, and B-mode with power).

The private attributes listed in the following table are used by the ACUSON X Family AE with Stress Echo images.

Attribute Name	Tag	VR	Description
View List	(0009,212A)	SQ	Names of all views represented in the study
>View Name	(0009,2120)	SH	Name of a view

Appendix A lists the DICOM SR mappings used by the ACUSON X Family AE in Obstetric and Gynecology Structured Reports. All private concept names use the Coding Scheme Designator "99SIEMENS".

Appendix B lists the DICOM SR mappings used by the ACUSON X Family AE in Vascular Structured Reports. All private concept names use the Coding Scheme Designator "99SIEMENS".

Appendix C lists the DICOM SR mappings used by the ACUSON X Family AE in Adult Echocardiography Structured Reports. All private concept names use the Coding Scheme Designator "99SIEMENSUS".

7 CONFIGURATION

ACUSON X Family system Networking and DICOM parameters can be configured through the ACUSON X Family System Presets Menu screens. The following configurations are supported:

- General system
- Network (local and remote)
- DICOM Store
- DICOM Storage Commitment
- DICOM Modality Worklist
- DICOM Modality Performed Procedure Step
- DICOM Query/Retrieve
- DICOM Print

7.1 General System Configuration

The following system parameter can be configured via the ACUSON X Family System Presets Basic Menu screens. This parameter is mapped to a DICOM image attribute:

- Hospital Name

7.1.1 Hospital Name

The user can enter the organization (i.e. hospital, clinic, etc.) as a text string in the Hospital Name field of the System Presets - General menu. The Organization Name field is transferred to DICOM devices as Institution Name - DICOM data element (0008,0080).

7.2 DICOM Network Configuration

DICOM and networking parameters can be configured for both the local ACUSON X Family device and remote DICOM service class providers through the System Presets DICOM Menu.

7.2.1 Local

The ACUSON X Family local network parameters are configurable. The following network parameters can be configured for an ACUSON X Family device:

- Host Name
- IP address
- Subnet IP mask
- Default Gateway
- DICOM Application Entity Title

7.2.2 Remote

Multiple DICOM service class providers can be configured through the system presets. The following network parameters can be configured for each remote device:

- Alias
- DICOM Device Application Entity Title
- IP Address

- Port Number
- Timeout in seconds
- Number of times to retry failure
- Seconds between each retry
- Write timeout in seconds
- Connect timeout in seconds

7.2.2.1 DICOM Store Configuration

Several configuration settings are provided in addition to those described in Section 7.2.2.

The Image Format setting provides control over the Presentation Contexts proposed during Association negotiation. This is documented in Section 4.2.2.2 Association Establishment Order.

Configuration options are provided to control the Photometric Interpretation of grayscale images stored to a DICOM Store SCP. Grayscale images can be stored as RGB, YBR-FULL-422 or MONOCHROME2.

Many ACUSON X Family B-Mode and M-Mode images contain no significant color, the only color is in the Acuson 'a' transducer position marker and the ECG trace, if used. When "Store grayscale images as Monochrome" is selected, single-frame images with no significant color content will be stored as MONOCHROME2. When "Store grayscale images as Monochrome" is selected, all multi-frame images are stored as RGB or YBR-FULL-422. When "Store grayscale images and clips as Monochrome" is selected, B-Mode and M-Mode single- and multi-frame images with no significant color content will be stored as MONOCHROME2.

7.2.2.2 DICOM Storage Commitment Configuration

Configuration of DICOM Storage Commitment remote devices must be performed with DICOM Store Configuration. The ACUSON X Family system supports Storage Commitment to the same remote device as Store.

7.2.2.3 DICOM Modality Worklist Configuration

Configuration of DICOM Modality Worklist remote devices must be performed from the DICOM Modality Worklist configuration. The ACUSON X Family system supports Modality Worklist to the remote device as Modality Worklist.

When the "Streamlined Search" option is enabled, the system automatically searches all procedures on the Modality Worklist server when the Worklist screen is entered for the next 24 hours.

When the "Strict Verification" option is enabled, the system verifies the DICOM standard tags on each study list retrieved from the Modality Worklist server.

The user can enter the "Maximum number of Worklist items" which specifies the number of search results to display on the worklist screen.

7.2.2.4 DICOM Modality Performed Procedure Step Configuration

Configuration of DICOM Modality Performed Procedure Step remote devices must be performed separately from DICOM Modality Worklist Configuration. The ACUSON X Family system supports MPPS to the same remote device as Modality Worklist or to a different device.

The "Store Image Format" setting controls the Referenced SOP Class UID (0008,1150) in the Referenced Image Sequence (0008,1140) of the MPPS N-SET sent by the ACUSON X Family system. Due to the ACUSON X Family system's ability to select from multiple Presentation Contexts during Association Negotiation, it is necessary to use this setting.

In the majority of installations the “Store Image Format” should be left at the default setting of “New Ultrasound”. There are two cases when the “Store Image Format” must be set to “Old Ultrasound” or “Secondary Capture”:

- When the active Storage Server “Image Format” is set to “Old Ultrasound” or “Secondary Capture”.
- When the active Storage Server “Image Format” is set to “Automatic”, but the Storage Server does not support US Image and US Multi-frame Image.

In both cases the correct setting can be determined by reviewing the DICOM Conformance Statement of the Storage Server and following the instructions below. DICOM Conformance Statements are usually available on the manufacturer’s Web site.

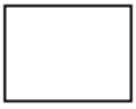
- If at least one of US Image and US Multi-frame Image are listed in the DICOM Conformance Statement and the active Storage Server “Image Format” is set to “Automatic” then “New Ultrasound” is the correct setting for “Store Image Format”.
- If the above is not true and at least one of US Image (Retired) and US Multi-frame Image (Retired) are listed in the DICOM Conformance Statement then “Old Ultrasound” is the correct setting for “Store Image Format”.
- If neither of the above are true then “Secondary Capture” is the correct setting for “Store Image Format”.

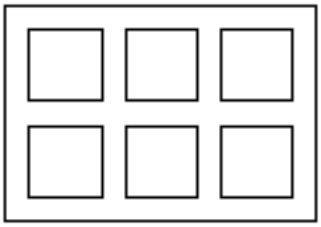
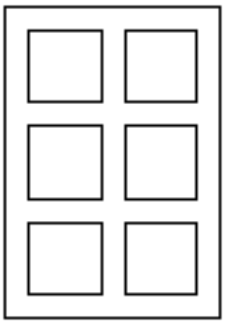
7.2.2.5 DICOM Query / Retrieve

There are no specific Query/Retrieve configurable parameters.

7.2.2.6 DICOM Print Configuration

For each DICOM Print server, the following data is configurable by the user using the System Presets DICOM Print User Interface. The effect of changing parameters of the DICOM Print server will be seen at the next created film sheet. The current film sheet is not affected by changing these parameters.

Parameter	Description
Printer Type	Color or Black and White - depends on printer
Film Size	Select the size of the film - 8x10 inches, 8.5x11 inches, 10x12 inches, 10x14 inches, 11x14 inches, 11x17 inches, 14x14 inches, 14x17 inches, 24x24 centimeters, 24x30 centimeters, A3, or A4.
Film Orientation	Select from Portrait: or Landscape: 

Parameter	Description
Display Format	You must supply the number of rows and columns of images on the printed sheet. For example, a 6 on 1 print with Landscape mode should have 3 columns and 2 rows: 
	A 6 on 1 with Portrait mode would have 2 columns and 3 rows: 
Print Priority	HIGH, MEDIUM or LOW
Medium Type	PAPER, CLEAR FILM, BLUE FILM, TRANSPARENCY or CURRENT (to use the currently loaded media)
Film Destination	MAGAZINE, PROCESSOR or CURRENT
Max. Density	Used to define the Black value - printer specific
Min. Density	Used to define the White value - printer specific
Smoothing Type	Printer specific value
Border Density	BLACK or WHITE
Empty Image Density	BLACK or WHITE
Trim	YES/NO to having a border around each image
Polarity	Normal/reverse. Normal means black is printed as black. Reverse means the grayscale is inverted so that black comes out as white and white as black.
Magnification	Replicate, Bilinear, Cubic, None
Configuration Information	Printer Specific values

7.3 External Equipment Configuration

The ACUSON X Family user can configure “Hard Key” to “Output Device” mapping through the System Presets - Customize Keys. Print images are acquired and sent to the assigned device when the user presses the associated key. The following key assignments are supported:

- **Clip Store** – This key can be assigned to Multi-frame Store or Disk Store.
- **Print/Store 1** – This key can be assigned to any configured DICOM Printer, DICOM Store, OEM printer, Multi-frame Store, or Disk Store.
- **Print/Store 2** – This key can be assigned to any configured DICOM Printer, DICOM Store, OEM printer, Multi-frame Store, or Disk Store.
- **Foot Switch** – The foot switch can be assigned to any configured OEM printer, Multi-frame Store, or Disk Store.

7.4 Support of Extended Character Sets

The “ISO-IR 100”, "GB18030", "ISO_IR 144" character sets are supported by the ACUSON X Family system based on the following language selections:

English, French, Italian, German, Spanish: "ISO_IR 100"

Chinese: "GB18030"

Russian: "ISO_IR 144"

8 SECURITY

8.1 Security Profiles

None supported.

8.2 Association Level Security

None supported.

8.3 Application Level Security

None supported.

8.4 Virus Protection

The ACUSON X Family computer system's networking has been configured to significantly reduce the possibility of virus and hacking vulnerabilities. On the X Family computer system, all ingress TCP and UDP ports are closed and/or absent of any type of server. The only exception to this is due to the necessity of a DICOM server available at ingress TCP port 104. Additionally, all non-essential computer services and components are disabled to minimize X Family egress network footprint.

Outside of some minimal network exchanges required by the X Family's commercial computer operating system, the only network connections initiated by the X Family system are for DICOM connectivity and network-share export function.

9 APPENDICES

9.1 Appendix A: OB-GYN Structured Report Measurements

This appendix lists the DICOM Structured Report (SR) mappings used in the Obstetric and Gynecologic Structured Reports of X Family DICOM SR files.

The mappings are organized in a manner similar to the DICOM SR Templates as described in PS 3.16-2011 of the DICOM Standard. The “Label” column identifies the on-screen Report label associated with a Concept Name. All private code values use the Coding Scheme Designator “99SIEMENS”.

The OB-GYN Report mappings follow the DICOM SR Template TID 5000: OB-GYN Ultrasound Procedure Report. Individual measurement values are shown on the Worksheet pages. Mean values are shown on the Report pages.

When a Concept Name has associated authors, the authors are listed in the next rows with

- the Label column as the author name on the Report page,
- the Code Meaning column as the author reference code, and
- the Modifiers column as the Normal Range Limits for Fetal Biometry Ratios or Population Statistical Descriptors, if available.

Notation:

< … > indicates that the description is not the actual text displayed
[…] is additional information

9.1.1 Patient Characteristics

Mean	Label	Code Meaning (Coding Scheme Designator, Code Value)	Modifiers
Patient Characteristics		Container: Patient Characteristics (DCM, 121118)	
	AB	Aborta (LN, 11612-9)	
	Ectopic	Ectopic Pregnancies (LN, 33065-4)	
	Gravida	Gravida (LN, 11996-6)	
	Para	Para (LN, 11977-6)	
	Height	Patient Height (LN, 8302-2)	
	Weight	Patient Weight (LN, 29463-7)	

9.1.2 OB-GYN Procedure Summary

Mean	Label	Code Meaning (Coding Scheme Designator, Code Value)	Modifiers
OB-GYN Procedure Summary		Container: Summary (DCM, 121111)	
	LMP	LMP (LN, 11955-2)	

9.1.3 Fetus Summary

Mean	Label	Code Meaning (Coding Scheme Designator, Code Value)	Modifiers
Fetus Summary		Container: Fetus Summary (DCM, 125008)	Subject UID (DCM, 121028) Subject ID (DCM, 121030)
	Clinical MA	Gestational Age (LN, 18185-9)	
	US MA, MA Based ON (AVERAGE)	Composite Ultrasound Age (LN, 11888-5)	
	US MA, MA Based ON (<Author Label>)	Composite Ultrasound Age (LN, 11888-5)	<Author Information>
	(Hadlock1) BPD, HC	Equation: Ultrasound MA Hadlock1 (99SIEMENS, USMAHadlock1)	
	(Hadlock2) BPD, AC	Equation: Ultrasound MA Hadlock2 (99SIEMENS, USMAHadlock2)	
	(Hadlock3) BPD, FL	Equation: Ultrasound MA Hadlock3 (99SIEMENS, USMAHadlock3)	
	(Hadlock4) HC, AC	Equation: Ultrasound MA Hadlock4 (99SIEMENS, USMAHadlock4)	
	(Hadlock5) HC, FL	Equation: Ultrasound MA Hadlock5 (99SIEMENS, USMAHadlock5)	
	(Hadlock6) AC, FL	Equation: Ultrasound MA Hadlock6 (99SIEMENS, USMAHadlock6)	
	(Hadlock7) BPD, HC, AC	Equation: Ultrasound MA Hadlock7 (99SIEMENS, USMAHadlock7)	
	(Hadlock8) BPD, HC, FL	Equation: Ultrasound MA Hadlock8 (99SIEMENS, USMAHadlock8)	
	(Hadlock9) BPD, AC, FL	Equation: Ultrasound MA Hadlock9 (99SIEMENS, USMAHadlock9)	
	(Hadlock10) HC, AC, FL	Equation: Ultrasound MA Hadlock10 (99SIEMENS, USMAHadlock10)	
	(Hadlock11) BPD, HC, AC, FL	Equation: Ultrasound MA Hadlock11 (99SIEMENS, USMAHadlock11)	

Mean	Label	Code Meaning (Coding Scheme Designator, Code Value)	Modifiers
	Estimated Fetal Weight: EFW1 or EFW2, <Author Label>, <Value> ±<Population Statistical Descriptor>, <Gestational Age>	Estimated Weight (LN, 11727-5)	<Author Information>
	HADLOCK1 (AC, FL)	Equation: EFW by AC, FL, Hadlock 1984 (LN, 11750-7)	2 Sigma Lower Value of population (SRT, R-00388) 2 Sigma Upper Value of population (SRT, R-00387)
	HADLOCK2 (BPD, AC, FL)	Equation: EFW by AC, BPD, FL, Hadlock 1985 (LN, 11735-8)	2 Sigma Lower Value of population (SRT, R-00388) 2 Sigma Upper Value of population (SRT, R-00387)
	HADLOCK3 (HC, AC, FL)	Equation: EFW by AC, FL, HC, Hadlock 1985 (LN, 11746-5)	2 Sigma Lower Value of population (SRT, R-00388) 2 Sigma Upper Value of population (SRT, R-00387)
	HADLOCK4 (BPD, HC, AC, FL)	Equation: EFW by AC, BPD, FL, HC, Hadlock 1985 (LN, 11732-5)	2 Sigma Lower Value of population (SRT, R-00388) 2 Sigma Upper Value of population (SRT, R-00387)
	HANSMANN (BPD, ATD)	Equation: EFW by BPD, TTD, Hansmann 1986 (LN, 33139-7)	2 Sigma Lower Value of population (SRT, R-00388) 2 Sigma Upper Value of population (SRT, R-00387)
	JSUM (AXT) (BPD, APTD, TTD, FL)	Equation: EFW JSUM AXT (99SIEMENS, EFWJSUMAXT)	1 Sigma Lower Value of population (SRT, R-00347) 1 Sigma Upper Value of population (SRT, R-00346)
	JSUM (BPD, AC, FL)	Equation: EFW JSUM (99SIEMENS, EFWJSUM)	No Population Statistical Descriptors
	MERZ (BPD, AC)	Equation: EFW Merz (99SIEMENS, EFWMerz)	2 Sigma Lower Value of population (SRT, R-00388) 2 Sigma Upper Value of population (SRT, R-00387)
	OSAKA (BPD, FTA, FL)	Equation: EFW by BPD, FTA, FL, Osaka 1990 (LN, 33140-5)	1 Sigma Lower Value of population (SRT, R-00347) 1 Sigma Upper Value of population (SRT, R-00346)
	SHEPARD (BPD, AC)	Equation: EFW by AC and BPD, Shepard 1982 (LN, 11739-0)	2 Sigma Lower Value of population (SRT, R-00388) 2 Sigma Upper Value of population (SRT, R-00387)
	TOKYO (BPD, APTD, TTD, FL)	Equation: EFW by BPD, APAD, TAD, FL, Tokyo 1987 (LN, 33144-7)	1 Sigma Lower Value of population (SRT, R-00347) 1 Sigma Upper Value of population (SRT, R-00346)
	Estimated Fetal Weight: EFW1 or EFW2, <Author Label>, <Value> ±<Population Statistical Descriptor>, <Gestational Age>	Gestational Age (LN, 18185-9)	<Author Information>
	JSUM (BPD, AC, FL)	Equation: EFW1 MA JSUM (99SIEMENS, MAEFW1JSUM) Equation: EFW2 MA JSUM (99SIEMENS, MAEFW2JSUM)	No Population Statistical Descriptors
	OSAKA (BPD, FTA, FL)	Equation: EFW1 MA Osaka (99SIEMENS, MAEFW1Osaka) Equation: EFW2 MA Osaka (99SIEMENS, MAEFW2Osaka)	No Population Statistical Descriptors
	TOKYO (BPD, APTD, TTD, FL)	Equation: EFW1 MA Tokyo (99SIEMENS, MAEFW1Tokyo) Equation: EFW2 MA Tokyo (99SIEMENS, MAEFW2Tokyo)	No Population Statistical Descriptors
	<Author Label> EFW%: EFW1 or EFW2	EFW percentile rank (LN, 11767-1)	<Author Information>
	Williams	Equation: FWP by GA, Williams 1982 (LN, 33184-3)	

Mean	Label	Code Meaning (Coding Scheme Designator, Code Value)	Modifiers
X	FHR	Fetal Heart Rate (LN, 11948-7)	

9.1.4 Fetal Biometry Ratios

Mean	Label	Code Meaning (Coding Scheme Designator, Code Value)	Modifiers
Fetal Biometry Ratios		Container: Fetal Biometry Ratios (DCM, 125001)	Subject UID (DCM, 121028) Subject ID (DCM, 121030)
	Ratio: CI, <Value> (<Lower Limit> - <Upper Limit>), <Author Label>	Cephalic Index (LN, 11823-2)	<Author Information>
	HADLOCK	Equation: CI Ratio Hadlock (99SIEMENS, CIHadlock)	Normal Range Lower Limit (SRT, R-10041) Normal Range Upper Limit (SRT, R-0038B)
	CHITTY	Equation: CI Ratio Chitty (99SIEMENS, CIChitty)	Normal Range Lower Limit (SRT, R-10041) Normal Range Upper Limit (SRT, R-0038B)
	Ratio: FL/AC, <Value> (<Lower Limit> - <Upper Limit>), <Author Label>	FL/AC (LN, 11871-1)	<Author Information>
	HADLOCK	Equation: FL/AC Hadlock (99SIEMENS, FLACHadlock)	Normal Range Lower Limit (SRT, R-10041) Normal Range Upper Limit (SRT, R-0038B)
	Ratio: FL/BPD, <Value> (<Lower Limit> - <Upper Limit>), <Author Label>	FL/BPD (LN, 11872-9)	<Author Information>
	HOHLER	Equation: FL/BPD Hohler (99SIEMENS, FLBPDHohler)	Normal Range Lower Limit (SRT, R-10041) Normal Range Upper Limit (SRT, R-0038B)
	Ratio: HC/AC, <Value> (<Lower Limit> - <Upper Limit>), <Author Label>	HC/AC (LN, 11947-9)	<Author Information>
	CAMPBELL	Equation: HC/AC by GA, Campbell 1977 (LN, 33182-7)	Normal Range Lower Limit (SRT, R-10041) Normal Range Upper Limit (SRT, R-0038B)
	NICOLAIDES	Equation: HC/AC Nicolaides (99SIEMENS, HCACNicolaides)	Normal Range Lower Limit (SRT, R-10041) Normal Range Upper Limit (SRT, R-0038B)
	Ratio: LVW/HW, <Value> (<Lower Limit> - <Upper Limit>), <Author Label>	LVW/HC (99SIEMENS, LVWOverHC)	<Author Information>
	JOHNSON	Equation: LVW/HW Johnson (99SIEMENS, LVWHWJohnson)	Normal Range Lower Limit (SRT, R-10041) Normal Range Upper Limit (SRT, R-0038B)

Mean	Label	Code Meaning (Coding Scheme Designator, Code Value)	Modifiers
	Ratio: TCD/AC, <Value> (<Lower Limit> - <Upper Limit>), <Author Label>	TCD/AC (99SIEMENS, TCDOverAC)	<Author Information>
	MEYER	Equation: TCD/AC Meyer (99SIEMENS, TCDACMeyer)	Normal Range Lower Limit (SRT, R-10041) Normal Range Upper Limit (SRT, R-0038B)
	NICOLAIDES	Equation: TCD/AC Nicolaides (99SIEMENS, TCDACNicolaides)	Normal Range Lower Limit (SRT, R-10041) Normal Range Upper Limit (SRT, R-0038B)
	Measurement: CTAR	Cardiothoracic Area Ratio (99SIEMENS, CTAR)	
	Measurement: A	CTAR Cardiac Area (99SIEMENS, CTARCardiacArea)	
	Measurement: B	CTAR Thoracic Area (99SIEMENS, CTARThoracicArea)	

9.1.5 Fetal Biometry

Mean	Label	Code Meaning (Coding Scheme Designator, Code Value)	Modifiers
Fetal Biometry		Container: Fetal Biometry (DCM, 125002)	Subject UID (DCM, 121028) Subject ID (DCM, 121030)
X	Measurement: AC, <Author Label>, <Gestational Age> ±<Population Statistical Descriptor>, <Value>	Abdominal Circumference (LN, 11979-2)	
		Gestational Age (LN, 18185-9)	<Author Information>
	HADLOCK	Equation: AC, Hadlock 1984 (LN, 11892-7)	2 Sigma Lower Value of population (SRT, R-00388) 2 Sigma Upper Value of population (SRT, R-00387)
	JSUM	Equation: AC MA JSUM (99SIEMENS, ACMAJSUM)	1 Sigma Lower Value of population (SRT, R-00347) 1 Sigma Upper Value of population (SRT, R-00346)
	LASSER	Equation: AC MA Lasser (99SIEMENS, ACMALasser)	2 Sigma Lower Value of population (SRT, R-00388) 2 Sigma Upper Value of population (SRT, R-00387)
	MERZ	Equation: AC, Mertz 1988 (LN, 33075-3)	2 Sigma Lower Value of population (SRT, R-00388) 2 Sigma Upper Value of population (SRT, R-00387)
X	Measurement: ASD, <Author Label>, <Gestational Age>, <Value>	Anterior-Posterior Abdominal Diameter (LN, 11818-2)	
		Gestational Age (LN, 18185-9)	<Author Information>
	MERZ	Equation: ASD MA Merz (99SIEMENS, ASDMAMerz)	No Population Statistical Descriptors
X	Measurement: APTD, <Value>	Anterior-Posterior Trunk Diameter (LN, 11819-0)	

Mean	Label	Code Meaning (Coding Scheme Designator, Code Value)	Modifiers
	Measurement: AXT, <Author Label>, <Gestational Age> ±<Population Statistical Descriptor>, <Value>	APAD * TAD (LN, 33191-8)	
		Gestational Age (LN, 18185-9)	<Author Information>
	TOKYO	Equation: AXT MA Tokyo (99SIEMENS, MAAXTTokyo)	1 Sigma Lower Value of population (SRT, R-00347) 1 Sigma Upper Value of population (SRT, R-00346)
X	Measurement: BPD, <Author Label>, <Gestational Age> ±<Population Statistical Descriptor>, <Value>	Biparietal Diameter (LN, 11820-8)	
		Gestational Age (LN, 18185-9)	<Author Information>
	ASUM	Equation: BPD, ASUM 1989 (LN, 33079-5)	No Population Statistical Descriptors
	HADLOCK	Equation: BPD, Hadlock 1984 (LN, 11902-4)	2 Sigma Lower Value of population (SRT, R-00388) 2 Sigma Upper Value of population (SRT, R-00387)
	JSUM	Equation: BPD MA JSUM (99SIEMENS, BPDMAJSUM)	1 Sigma Lower Value of population (SRT, R-00347) 1 Sigma Upper Value of population (SRT, R-00346)
	LASSER	Equation: BPD MA Lasser (99SIEMENS, BPDMALasser)	2 Sigma Lower Value of population (SRT, R-00388) 2 Sigma Upper Value of population (SRT, R-00387)
	MERZ	Equation: BPD, Mertz 1988 (LN, 33081-1)	2 Sigma Lower Value of population (SRT, R-00388) 2 Sigma Upper Value of population (SRT, R-00387)
	OSAKA	Equation: BPD, Osaka 1989 (LN, 33082-9)	1 Sigma Lower Value of population (SRT, R-00347) 1 Sigma Upper Value of population (SRT, R-00346)
	REMPEN	Equation: BPD, Rempen 1991 (LN, 33083-7)	2 Sigma Lower Value of population (SRT, R-00388) 2 Sigma Upper Value of population (SRT, R-00387)
	TOKYO	Equation: BPD, Tokyo 1986 (LN, 33085-2)	1 Sigma Lower Value of population (SRT, R-00347) 1 Sigma Upper Value of population (SRT, R-00346)
	Measurement: CorBPD, <Author Label>, <Gestational Age> ±<Population Statistical Descriptor>, <Value>	BPD area corrected (LN, 11824-0)	
		Gestational Age (LN, 18185-9)	<Author Information>
	USMA	Equation: BPD area corrected MA (99SIEMENS, UsmaCorBPD)	2 Sigma Lower Value of population (SRT, R-00388) 2 Sigma Upper Value of population (SRT, R-00387)
X	Measurement: Facial Angle, <Value>	Facial Angle (99SIEMENS, FacialAngle)	

Mean	Label	Code Meaning (Coding Scheme Designator, Code Value)	Modifiers
X	Measurement: FT, <Author Label>, <Gestational Age> ±<Population Statistical Descriptor>, <Value>	Foot length (LN, 11965-1)	
		Gestational Age (LN, 18185-9)	<Author Information>
	MERCER	Equation: Foot Length, Mercer 1987 (LN, 11926-3)	2 Sigma Lower Value of population (SRT, R-00388) 2 Sigma Upper Value of population (SRT, R-00387)
X	Measurement: HC, <Author Label>, <Gestational Age> ±<Population Statistical Descriptor>, <Value>	Head Circumference (LN, 11984-2)	
		Gestational Age (LN, 18185-9)	<Author Information>
	HADLOCK	Equation: HC, Hadlock 1984 (LN, 11932-1)	2 Sigma Lower Value of population (SRT, R-00388) 2 Sigma Upper Value of population (SRT, R-00387)
	LASSER	Equation: HC MA Lasser (99SIEMENS, HCMALasser)	2 Sigma Lower Value of population (SRT, R-00388) 2 Sigma Upper Value of population (SRT, R-00387)
	MERZ	Equation: HC Merz, 1988 (LN, 33115-7)	2 Sigma Lower Value of population (SRT, R-00388) 2 Sigma Upper Value of population (SRT, R-00387)
X	Measurement: Left RAP, <Value>	Left Kidney thickness (LN, 11853-9)	
X	Measurement: Left RL, <Value>	Left Kidney length (LN, 11834-9)	
X	Measurement: OFD, <Author Label>, <Gestational Age> ±<Population Statistical Descriptor>, <Value>	Occipital-Frontal Diameter (LN, 11851-3)	
		Gestational Age (LN, 18185-9)	<Author Information>
	ASUM	Equation: OFD, ASUM 2000 (LN, 33119-9)	No Population Statistical Descriptors
X	Measurement: Right RAP, <Value>	Right Kidney thickness (LN, 11855-4)	
X	Measurement: Right RL, <Value>	Right Kidney length (LN, 11836-4)	
X	Measurement: FTA, <Author Label>, <Gestational Age> ±<Population Statistical Descriptor>, <Value>	Thoracic Area (LN, 33068-8)	
		Gestational Age (LN, 18185-9)	<Author Information>
	OSAKA	Equation: FTA MA Osaka (99SIEMENS, FTAMAOsaka)	No Population Statistical Descriptors
X	Measurement: TC, <Value>	Thoracic Circumference (LN, 11988-3)	
X	Measurement: TCD, <Value>	Trans Cerebellar Diameter (LN, 11863-8)	
X	Measurement: TTD, <Value>	Transverse Thoracic Diameter (LN, 11864-6)	

Mean	Label	Code Meaning (Coding Scheme Designator, Code Value)	Modifiers
X	Measurement: ATD, <Author Label>, <Gestational Age>, <Value>	Tranverse Abdominal Diameter (LN, 11862-0)	
		Gestational Age (LN, 18185-9)	<Author Information>
	MERZ	Equation: ATD MA Merz (99SIEMENS, ATDMAMerz)	No Population Statistical Descriptors

9.1.6 Fetal Long Bones

Mean	Label	Code Meaning (Coding Scheme Designator, Code Value)	Modifiers
Long Bones		Container: Fetal Long Bones (DCM, 125003)	Subject UID (DCM, 121028) Subject ID (DCM, 121030)
X	Measurement: CL, <Author Label>, <Gestational Age> ±<Population Statistical Descriptor>, <Value>	Clavicle length (LN, 11962-8)	
		Gestational Age (LN, 18185-9)	<Author Information>
	YARKONI	Equation: Clavicle length,Yarkoni 1985 (LN, 33088-6)	2 Sigma Lower Value of population (SRT, R-00388) 2 Sigma Upper Value of population (SRT, R-00387)
X	Measurement: FL, <Author Label>, <Gestational Age> ±<Population Statistical Descriptor>, <Value>	Femur Length (LN, 11963-6)	
		Gestational Age (LN, 18185-9)	<Author Information>
	HADLOCK	Equation: FL, Hadlock 1984 (LN, 11920-6)	2 Sigma Lower Value of population (SRT, R-00388) 2 Sigma Upper Value of population (SRT, R-00387)
	JEANTY	Equation: FL, Jeanty 1984 (LN, 11923-0)	2 Sigma Lower Value of population (SRT, R-00388) 2 Sigma Upper Value of population (SRT, R-00387)
	JSUM	Equation: FL MA JSUM (99SIEMENS, FLMAJSUM)	1 Sigma Lower Value of population (SRT, R-00347) 1 Sigma Upper Value of population (SRT, R-00346)
	MERZ	Equation: FL, Merz 1988 (LN, 33542-2)	2 Sigma Lower Value of population (SRT, R-00388) 2 Sigma Upper Value of population (SRT, R-00387)
	OSAKA	Equation: FL, Osaka 1989 (LN, 33101-7)	1 Sigma Lower Value of population (SRT, R-00347) 1 Sigma Upper Value of population (SRT, R-00346)
	TOKYO	Equation: FL, Tokyo 1986 (LN, 33103-3)	1 Sigma Lower Value of population (SRT, R-00347) 1 Sigma Upper Value of population (SRT, R-00346)
X	Measurement: HL, <Author Label>, <Gestational Age> ±<Population Statistical Descriptor>, <Value>	Humerus length (LN, 11966-9)	

Mean	Label	Code Meaning (Coding Scheme Designator, Code Value)	Modifiers
		Gestational Age (LN, 18185-9)	<Author Information>
	JEANTY	Equation: Humerus, Jeanty 1984 (LN, 11936-2)	2 Sigma Lower Value of population (SRT, R-00388) 2 Sigma Upper Value of population (SRT, R-00387)
	OSAKA	Equation: Humerus Length, Osaka 1989 (LN, 33117-3)	1 Sigma Lower Value of population (SRT, R-00347) 1 Sigma Upper Value of population (SRT, R-00346)
X	Measurement: TL, <Author Label>, <Gestational Age> ±<Population Statistical Descriptor>, <Value>	Tibia length (LN, 11968-5)	
		Gestational Age (LN, 18185-9)	<Author Information>
	JEANTY	Equation: Tibia, Jeanty 1984 (LN, 11941-2)	2 Sigma Lower Value of population (SRT, R-00388) 2 Sigma Upper Value of population (SRT, R-00387)
X	Measurement: UL, <Author Label>, <Gestational Age> ±<Population Statistical Descriptor>, <Value>	Ulna length (LN, 11969-3)	
		Gestational Age (LN, 18185-9)	<Author Information>
	JEANTY	Equation: Ulna, Jeanty 1984 (LN, 11944-6)	2 Sigma Lower Value of population (SRT, R-00388) 2 Sigma Upper Value of population (SRT, R-00387)

9.1.7 Fetal Cranium

Mean	Label	Code Meaning (Coding Scheme Designator, Code Value)	Modifiers
Fetal Cranium		Container: Fetal Cranium (DCM, 125004)	Subject UID (DCM, 121028) Subject ID (DCM, 121030)
X	Measurement: Ant CV, <Value>	Anterior Horn Lateral ventricular width (LN, 33197-5)	
X	Measurement: Cist Magna, <Value>	Cisterna Magna length (LN, 11860-4)	
X	Measurement: LVW, <Value>	Lateral Ventrical width (LN, 12171-5)	
X	Measurement: NF, <Value>	Nuchal Fold thickness (LN, 12146-7)	

Mean	Label	Code Meaning (Coding Scheme Designator, Code Value)	Modifiers
X	Measurement: BN, <Author Label>, <Gestational Age> ±<Population Statistical Descriptor>, <Value>	Outer Orbital Diameter (LN, 11629-3)	
		Gestational Age (LN, 18185-9)	<Author Information>
	JEANTY	Equation: BN MA Jeanty (99SIEMENS, BNMAJeanty)	2 Sigma Lower Value of population (SRT, R-00388) 2 Sigma Upper Value of population (SRT, R-00387)
	TONGSONG	Equation: BN MA Tongsong (99SIEMENS, BNMATongsong)	2 Sigma Lower Value of population (SRT, R-00388) 2 Sigma Upper Value of population (SRT, R-00387)
X	Measurement: Post CV, <Value>	Posterior Horn Lateral ventricular width (LN, 33196-7)	
X	Measurement: HW, <Value>	Width of Hemisphere (LN, 12170-7)	

9.1.8 Fetal Biophysical Profile

Mean	Label	Code Meaning (Coding Scheme Designator, Code Value)	Modifiers
Fetal Biophysical Profile		Container: Biophysical Profile (DCM, 125006)	Subject UID (DCM, 121028) Subject ID (DCM, 121030)
	AFV	Amniotic Fluid Volume (LN, 11630-1)	
	Total	Biophysical Profile Sum Score (LN, 11634-3)	
	Breathing	Fetal Breathing (LN, 11632-7)	
	Tone	Fetal Tone (LN, 11635-0)	
	Movement	Gross Body Movement (LN, 11631-9)	

9.1.9 Early Gestation

Mean	Label	Code Meaning (Coding Scheme Designator, Code Value)	Modifiers
Early Gestation		Container: Early Gestation (DCM, 125009)	Subject UID (DCM, 121028) Subject ID (DCM, 121030)
X	Early OB: CRL, <Author Label>, <Gestational Age> ±<Population Statistical Descriptor>, <Value>	Crown Rump Length (LN, 11957-8)	
		Gestational Age (LN, 18185-9)	<Author Information>
	ASUM	Equation: CRL, ASUM 2000 (LN, 33090-2)	No Population Statistical Descriptors

Mean	Label	Code Meaning (Coding Scheme Designator, Code Value)	Modifiers
	HADLOCK	Equation: CRL, Hadlock 1992 (LN, 11910-7)	2 Sigma Lower Value of population (SRT, R-00388) 2 Sigma Upper Value of population (SRT, R-00387)
	HANSMANN	Equation: CRL, Hansmann 1986 (LN, 33540-6)	2 Sigma Lower Value of population (SRT, R-00388) 2 Sigma Upper Value of population (SRT, R-00387)
	JSUM	Equation: CRL MA JSUM (99SIEMENS, CRLMAJSUM)	No Population Statistical Descriptors
	LASSER	Equation: CRL MA Lasser (99SIEMENS, CRLMALasser)	2 Sigma Lower Value of population (SRT, R-00388) 2 Sigma Upper Value of population (SRT, R-00387)
	OSAKA	Equation: CRL, Osaka 1989 (LN, 33093-6)	1 Sigma Lower Value of population (SRT, R-00347) 1 Sigma Upper Value of population (SRT, R-00346)
	ROBINSON	Equation: CRL, Robinson 1975 (LN, 11914-9)	2 Sigma Lower Value of population (SRT, R-00388) 2 Sigma Upper Value of population (SRT, R-00387)
	TOKYO	Equation: CRL, Tokyo 1986 (LN, 33096-9)	1 Sigma Lower Value of population (SRT, R-00347) 1 Sigma Upper Value of population (SRT, R-00346)
X	Early OB: GS, <Author Label>, <Gestational Age> ±<Population Statistical Descriptor>, <Value>	Gestational Sac Diameter (LN, 11850-5)	
		Gestational Age (LN, 18185-9)	<Author Information>
	OSAKA	Equation: GS MA Osaka (99SIEMENS, GSMAOsaka)	1 Sigma Lower Value of population (SRT, R-00347) 1 Sigma Upper Value of population (SRT, R-00346)
	TOKYO	Equation: GS, Tokyo 1986 (LN, 33108-2)	1 Sigma Lower Value of population (SRT, R-00347) 1 Sigma Upper Value of population (SRT, R-00346)
X	Measurement: MSD, <Author Label>, <Gestational Age> ±<Population Statistical Descriptor>, <Value>	Gestational Sac Diameter (LN, 11850-5)	
		Gestational Age (LN, 18185-9)	<Author Information>
	HELLMAN	Equation: GS, Hellman 1969 (LN, 11928-9)	No Population Statistical Descriptors
	REMPEN	Equation: GS, Rempen 1991 (LN, 11929-7)	2 Sigma Lower Value of population (SRT, R-00388) 2 Sigma Upper Value of population (SRT, R-00387)
X	Measurement: NT, <Value>	Nuchal Translucency (LN, 33069-6)	
X	Measurement: Yolk Sac, <Value>	Yolk Sac length (LN, 11816-6)	

9.1.10 Amniotic Sac

Mean	Label	Code Meaning (Coding Scheme Designator, Code Value)	Modifiers
Amniotic Sac		Container: Findings (DCM, 121070)	Finding Site: Amniotic Sac (SRT, T-F1300)
	Measurement: AFI	Amniotic Fluid Index (LN, 11627-7)	
X	Measurement: Q1	First Quadrant Diameter (LN, 11624-4)	
X	Measurement: Q2	Second Quadrant Diameter (LN, 11626-9)	
X	Measurement: Q3	Third Quadrant Diameter (LN, 11625-1)	
X	Measurement: Q4	Fourth Quadrant Diameter (LN, 11623-6)	

9.1.11 Pelvis and Uterus

Mean	Label	Code Meaning (Coding Scheme Designator, Code Value)	Modifiers
Pelvis and Uterus		Container: Pelvis and Uterus (DCM, 125011)	
X	Measurement: Cervix Len [OB]	Cervix Length (LN, 11961-0)	
X	2D Mode: Cervix [Gyn]	Cervix Length (LN, 11961-0)	
	2D Mode: Endometrium	Endometrium Thickness (LN, 12145-9)	
		Container: Uterus (SRT, T-83000)	
	2D Mode: Uterus Depth	Uterus Height (LN, 11859-6)	
	2D Mode: Uterus Length	Uterus Length (LN, 11842-2)	
	2D Mode: Uterus Volume	Uterus Volume (LN, 33192-6)	
	2D Mode: Uterus Width	Uterus Width (LN, 11865-3)	

9.1.12 Ovaries

Mean	Label	Code Meaning (Coding Scheme Designator, Code Value)	Modifiers
Ovary		Container: Findings (DCM, 121070)	Finding Site: Ovary (SRT, T-87000)
		Container: Ovary (SRT, T-87000)	
	2D Mode: Lt Ovary Depth	Left Ovary Height (LN, 11857-0)	
	2D Mode: Lt Ovary Length	Left Ovary Length (LN, 11840-6)	
	2D Mode: Lt Ovary Volume	Left Ovary Volume (LN, 12164-0)	

	2D Mode: Lt Ovary Width	Left Ovary Width (LN, 11829-9)	
		Container: Ovary (SRT, T-87000)	
	2D Mode: Rt Ovary Depth	Right Ovary Height (LN, 11858-8)	
	2D Mode: Rt Ovary Length	Right Ovary Length (LN, 11841-4)	
	2D Mode: Rt Ovary Volume	Right Ovary Volume (LN, 12165-7)	
	2D Mode: Rt Ovary Width	Right Ovary Width (LN, 11830-7)	

9.1.13 Follicles

Mean	Label	Code Meaning (Coding Scheme Designator, Code Value)	Modifiers
Ovarian Follicle <n> = 1 to 15		Container: Findings (DCM, 121070)	Finding Site: Ovarian Follicle (SRT, T-87600) Laterality: Left (SRT, G-C171) or Laterality: Right (SRT, G-C171)
		Container: Measurement Group	Text: Identifier (DCM, 125010) [Value = “Left Follicle <n>” or “Right Follicle <n>”]
	Follicle Measurement, Lt or Rt Follicle: #<n>	Area (SRT, G-A166)	
	Follicle Measurement, Lt or Rt Follicle: #<n>	Circumference (SRT, M-02560)	
	Follicle Measurement, Lt or Rt Follicle: #<n> [1 distance]	Follicle diameter (LN, 11793-7)	
X	Follicle Measurement, Lt or Rt Follicle: #<n> [2 distances]	Follicle diameter (LN, 11793-7)	
X	Follicle Measurement, Lt or Rt Follicle: #<n> [3 distances]	Follicle diameter (LN, 11793-7)	
	Follicle Measurement, Lt or Rt Follicle: #<n>	Volume (SRT, G-D705)	

9.1.14 Embryonic Vascular Structure

Mean	Label	Code Meaning (Coding Scheme Designator, Code Value)	Modifiers
Embryonic Vascular Structure [One vessel per Findings instance]		Container: Findings (DCM, 121070)	Finding Site: Embryonic Vascular Structure (SRT, T-F6800)
	Doppler: MCA	Container: Middle Cerebral Artery (SRT, T-45600)	Subject UID (DCM, 121028) Subject ID (DCM, 121030)
X	Diastole	End Diastolic Velocity (LN, 11653-3)	
	PI	Pulsatility Index (LN, 12008-9)	
	RI	Resistivity Index (LN, 12023-8)	
	S/D	Systolic to Diastolic Velocity Ratio (LN, 12144-2)	
X	Systole	Peak Systolic Velocity (LN, 11726-7)	

9.1.15 Pelvic Vascular Structure

Mean	Label	Code Meaning (Coding Scheme Designator, Code Value)	Modifiers
Pelvic Vascular Structure [One vessel per Findings instance]		Container: Findings (DCM, 121070)	Finding Site: Pelvic Vascular Structure (SRT, T-D6007)
	Doppler Mode: Left Ovarian Artery	Container: Ovarian Artery (SRT, T-46980)	Laterality: Left (SRT, G-A101)
X	Diastole	End Diastolic Velocity (LN, 11653-3)	
	PI	Pulsatility Index (LN, 12008-9)	
	RI	Resistivity Index (LN, 12023-8)	
	S/D	Systolic to Diastolic Velocity Ratio (LN, 12144-2)	
X	Systole	Peak Systolic Velocity (LN, 11726-7)	
	Doppler Mode: Right Ovarian Artery	Container: Ovarian Artery (SRT, T-46980)	Laterality: Right (SRT, G-A100)
X	Diastole	End Diastolic Velocity (LN, 11653-3)	
	PI	Pulsatility Index (LN, 12008-9)	
	RI	Resistivity Index (LN, 12023-8)	
	S/D	Systolic to Diastolic Velocity Ratio (LN, 12144-2)	
X	Systole	Peak Systolic Velocity (LN, 11726-7)	
	Doppler Mode: Left Uterine Artery	Container: Uterine Artery (SRT, T-46820)	Laterality: Left (SRT, G-A101)
	Diastole	End Diastolic Velocity (LN, 11653-3)	

Mean	Label	Code Meaning (Coding Scheme Designator, Code Value)	Modifiers
	PI	Pulsatility Index (LN, 12008-9)	
	RI	Resistivity Index (LN, 12023-8)	
	S/D	Systolic to Diastolic Velocity Ratio (LN, 12144-2)	
	Systole	Peak Systolic Velocity (LN, 11726-7)	
	Doppler Mode: Right Uterine Artery	Container: Uterine Artery (SRT, T-46820)	Laterality: Right (SRT, G-A100)
	Diastole	End Diastolic Velocity (LN, 11653-3)	
	PI	Pulsatility Index (LN, 12008-9)	
	RI	Resistivity Index (LN, 12023-8)	
	S/D	Systolic to Diastolic Velocity Ratio (LN, 12144-2)	
	Systole	Peak Systolic Velocity (LN, 11726-7)	
	Doppler: Umb A	Container: Umbilical Artery (SRT, T-F1810)	
X	Diastole	End Diastolic Velocity (LN, 11653-3)	
	PI	Pulsatility Index (LN, 12008-9)	
	RI	Resistivity Index (LN, 12023-8)	
	S/D	Systolic to Diastolic Velocity Ratio (LN, 12144-2)	
X	Systole	Peak Systolic Velocity (LN, 11726-7)	
	Doppler: Umb VD	Container: Umbilical Vein (SRT, T-F1820)	
X		Vessel lumen diameter (SRT, G-0364)	

9.2 Appendix B: Vascular Structured Report

This appendix lists the DICOM Structured Report (SR) mappings used in the Vascular Structured Reports of X Family DICOM SR files.

The mappings are organized in a manner similar to the DICOM SR Templates as described in PS 3.16-20011 of the DICOM Standard. The "Label" column identifies the on-screen label associated with a measurement. All private code values use the Coding Scheme Designator "99SIEMENS".

The Vascular Report mappings follow the DICOM SR Template TID 5100: Vascular Ultrasound Report.

Notation:
[…] is additional information

Measurements List 1 [L1]

Label	Code Meaning (Coding Scheme Designator, Code Value)
Diastole	End Diastolic Velocity (LN, 11653-3)
%Stenosis or %Steno [TCD]	Lumen Area Stenosis (SRT, R-101BA)
%Stenosis or %Steno [TCD]	Lumen Diameter Stenosis (SRT, R-101BB)
Systole	Peak Systolic Velocity (LN, 11726-7)
PI	Pulsatility Index (LN, 12008-9)
RI	Resistivity Index (LN, 12023-8)
S/D	Systolic to Diastolic Velocity Ratio (LN, 12144-2)

Measurements List 2 [L2]

Label	Code Meaning (Coding Scheme Designator, Code Value)
Systole	Peak Systolic Velocity (LN, 11726-7)
PI	Pulsatility Index (LN, 12008-9)
RI	Resistivity Index (LN, 12023-8)

Measurements List 3 [L3]

Label	Code Meaning (Coding Scheme Designator, Code Value)
TCD Acceleration Measurements	Acceleration Index (LN, 20167-3)
TCD Measurements	Distance (DCM, 121206)
Diastole	End Diastolic Velocity (LN, 11653-3)
TCD Velocity Measurements	Flow Velocity (DCM, 110828)
%Stenosis or %Steno [TCD]	Lumen Area Stenosis (SRT, R-101BA)
%Stenosis or %Steno [TCD]	Lumen Diameter Stenosis (SRT, R-101BB)
Systole	Peak Systolic Velocity (LN, 11726-7)
PI	Pulsatility Index (LN, 12008-9)
RI	Resistivity Index (LN, 12023-8)
S/D	Systolic to Diastolic Velocity Ratio (LN, 12144-2)
TCD Flow Volume Measurements: FV	Volume Flow by Area (99SIEMENS, VolFByArea)
TCD Flow Volume Measurements: FV	Volume Flow by Diameter (99SIEMENS, VolFByDiam)

9.2.1 Patient Characteristics

Label	Code Meaning (Coding Scheme Designator, Code Value)	Modifiers
Patient Characteristics	Container: Patient Characteristics (DCM, 121118)	
BP	Diastolic Blood Pressure (SRT, F-008ED)	
Age	Subject Age (DCM, 121033)	
Sex	Subject Sex (DCM, 121032)	
BP	Systolic Blood Pressure (SRT, F-008EC)	

9.2.2 Blood Vessel of Head (Left Intracranial Cerebral Vessels)

Label	Code Meaning (Coding Scheme Designator, Code Value)	Modifiers
Blood Vessel of Head (Left Intracranial Cerebral Vessels)	Finding Site: Blood Vessel of Head (SRT, T-40501)	Laterality: Left (SRT, G-A101)
TCD Doppler Ratio Measurements: L MCA/L ICA-Siphon [TCD]	MCA/ICA-Siphon Time averaged peak velocity ratio (99SIEMENS, McalcaSRatio)	

Label	Code Meaning (Coding Scheme Designator, Code Value)	Modifiers
Lt ACA-A1 [TCD]	Container: Anterior Cerebral Artery A1 Segment (99SIEMENS, AntCerebAA1) [Measurements List: L3]	
Lt ACA-A2 [TCD]	Container: Anterior Cerebral Artery A1 Segment (99SIEMENS, AntCerebAA1) [Measurements List: L3]	
Lt ICA-Siphon [TCD]	Container: Carotid Siphon (SRT, T-45308) [Measurements List: L3]	
Lt MCA [TCD]	Container: Middle Cerebral Artery (SRT, T-45600) [Measurements List: L3]	
Lt PCA [TCD]	Container: Posterior Cerebral Artery (SRT, T-45900) [Measurements List: L3]	
Lt PCA-P1 [TCD]	Container: Posterior Cerebral Artery P1 Segment (SRT, R-10253) [Measurements List: L3]	
Lt PCA-P2 [TCD]	Container: Posterior Cerebral Artery P2 Segment (SRT, R-10255) [Measurements List: L3]	

9.2.3 Blood Vessel of Head (Right Intracranial Cerebral Vessels)

Label	Code Meaning (Coding Scheme Designator, Code Value)	Modifiers
Blood Vessel of Head (Right Intracranial Cerebral Vessels)	Finding Site: Blood Vessel of Head (SRT, T-40501)	Laterality: Right (SRT, G-A100)
TCD Doppler Ratio Measurements: R MCA/R ICA-Siphon [TCD]	MCA/ICA-Siphon Time averaged peak velocity ratio (99SIEMENS, McalcaSRatio)	
Rt ACA-A1 [TCD]	Container: Anterior Cerebral Artery A1 Segment (99SIEMENS, AntCerebAA1) [Measurements List: L3]	
Rt ACA-A2 [TCD]	Container: Anterior Cerebral Artery A1 Segment (99SIEMENS, AntCerebAA1) [Measurements List: L3]	
Rt ICA-Siphon [TCD]	Container: Carotid Siphon (SRT, T-45308) [Measurements List: L3]	
Rt MCA [TCD]	Container: Middle Cerebral Artery (SRT, T-45600) [Measurements List: L3]	

Label	Code Meaning (Coding Scheme Designator, Code Value)	Modifiers
Rt PCA [TCD]	Container: Posterior Cerebral Artery (SRT, T-45900) [Measurements List: L3]	
Rt PCA-P1 [TCD]	Container: Posterior Cerebral Artery P1 Segment (SRT, R-10253) [Measurements List: L3]	
Rt PCA-P2 [TCD]	Container: Posterior Cerebral Artery P2 Segment (SRT, R-10255) [Measurements List: L3]	

9.2.4 Blood Vessel of Head (Unilateral Intracranial Cerebral Vessels)

Label	Code Meaning (Coding Scheme Designator, Code Value)	Modifiers
Blood Vessel of Head (Unilateral Intracranial Cerebral Vessels)	Finding Site: Blood Vessel of Head (SRT, T-40501)	Laterality: Unilateral (SRT, G-A103)
ACoA [TCD]	Container: Anterior Communicating Artery (SRT, T-45530) [Measurements List: L3]	
Basilar A [TCD]	Container: Basilar Artery (SRT, T-45800) [Measurements List: L3]	
PCoA [TCD]	Container: Posterior Communicating Artery (SRT, T-45320) [Measurements List: L3]	

9.2.5 Artery of Neck (Left Extracranial Arteries, Carotid Ratios)

Label	Code Meaning (Coding Scheme Designator, Code Value)	Modifiers
Artery of Neck (Left Extracranial Arteries, Carotid Ratios)	Finding Site: Artery of neck (SRT, T-45005)	Laterality: Left (SRT, G-A101)
Ratio, Left: ICA/CCA(D) [Cerebro Vascular]	ICA/CCA velocity ratio (LN, 33868-1)	Cardiac Cycle Point: End Diastole (SRT, F-32011)
Ratio, Left: ICA/CCA(S) [Cerebro Vascular]	ICA/CCA velocity ratio (LN, 33868-1)	Cardiac Cycle Point: Peak Systolic (SRT, F-32021)
Left CCA [Cerebro Vascular]	Container: Common Carotid Artery (SRT, T-45100)	
CCA Dist	[Measurements List: L1]	Topographical modifier: Distal (SRT, G-A119)
CCA Mid	[Measurements List: L1]	Topographical modifier: Mid-longitudinal (SRT, G-A188)
CCA Prox	[Measurements List: L1]	Topographical modifier: Proximal (SRT, G-A118)
Left ECA [Cerebro Vascular]	Container: External Carotid Artery (SRT, T-45200) [Measurements List: L1]	

Label	Code Meaning (Coding Scheme Designator, Code Value)	Modifiers
Left ICA [Cerebro Vascular]	Container: Internal Carotid Artery (SRT, T-45300)	
ICA Dist	[Measurements List: L1]	Topographical modifier: Distal (SRT, G-A119)
ICA Mid	[Measurements List: L1]	Topographical modifier: Mid-longitudinal (SRT, G-A188)
ICA Prox	[Measurements List: L1]	Topographical modifier: Proximal (SRT, G-A118)
Left VA [Cerebro Vascular]	Container: Vertebral Artery (SRT, T-45700) [Measurements List: L1]	
Lt Vert A [TCD]	Container: Vertebral Artery (SRT, T-45700) [Measurements List: L3]	

9.2.6 Artery of Neck (Right Extracranial Arteries, Carotid Ratios)

Label	Code Meaning (Coding Scheme Designator, Code Value)	Modifiers
Artery of Neck (Right Extracranial Arteries, Carotid Ratios)	Finding Site: Artery of neck (SRT, T-45005)	Laterality: Right (SRT, G-A100)
Ratio, Right: ICA/CCA(D) [Cerebro Vascular]	ICA/CCA velocity ratio (LN, 33868-1)	Cardiac Cycle Point: End Diastole (SRT, F-32011)
Ratio, Right: ICA/CCA(S) [Cerebro Vascular]	ICA/CCA velocity ratio (LN, 33868-1)	Cardiac Cycle Point: Peak Systolic (SRT, F-32021)
Right CCA [Cerebro Vascular]	Container: Common Carotid Artery (SRT, T-45100)	
CCA Dist	[Measurements List: L1]	Topographical modifier: Distal (SRT, G-A119)
CCA Mid	[Measurements List: L1]	Topographical modifier: Mid-longitudinal (SRT, G-A188)
CCA Prox	[Measurements List: L1]	Topographical modifier: Proximal (SRT, G-A118)
Right ECA [Cerebro Vascular]	Container: External Carotid Artery (SRT, T-45200) [Measurements List: L1]	
Right ICA [Cerebro Vascular]	Container: Internal Carotid Artery (SRT, T-45300)	
ICA Dist	[Measurements List: L1]	Topographical modifier: Distal (SRT, G-A119)
ICA Mid	[Measurements List: L1]	Topographical modifier: Mid-longitudinal (SRT, G-A188)
ICA Prox	[Measurements List: L1]	Topographical modifier: Proximal (SRT, G-A118)
Right VA [Cerebro Vascular]	Container: Vertebral Artery (SRT, T-45700) [Measurements List: L1]	
Rt Vert A [TCD]	Container: Vertebral Artery (SRT, T-45700) [Measurements List: L3]	

9.2.7 Artery of Lower Extremity (Left Side)

Label	Code Meaning (Coding Scheme Designator, Code Value)	Modifiers
Artery of Lower Extremity (Left Side)	Finding Site: Artery of Lower Extremity (SRT, T-47040)	Laterality: Left (SRT, G-A101)
Left ATA [Peripheral Vascular]	Container: Anterior Tibial Artery (SRT, T-47700) [Measurements List: L2]	
Left CFA [Peripheral Vascular]	Container: Common Femoral Artery (SRT, T-47400) [Measurements List: L2]	
Left CIA [Peripheral Vascular]	Container: Common Iliac Artery (SRT, T-46710) [Measurements List: L2]	
Left DPA [Peripheral Vascular]	Container: Dorsalis Pedis Artery (SRT, T-47741) [Measurements List: L2]	
Left EIA [Peripheral Vascular]	Container: External Iliac Artery (SRT, T-46910) [Measurements List: L2]	
Left PER A [Peripheral Vascular]	Container: Peroneal Artery (SRT, T-47630) [Measurements List: L2]	
Left POP A [Peripheral Vascular]	Container: Popliteal Artery (SRT, T-47500) [Measurements List: L2]	
Left PTA [Peripheral Vascular]	Container: Posterior Tibial Artery (SRT, T-47600) [Measurements List: L2]	
Left PFA [Peripheral Vascular]	Container: Profunda Femoris Artery (SRT, T-47440) [Measurements List: L2]	
Left SFA [Peripheral Vascular]	Container: Superficial Femoral Artery (SRT, T-47403)	
SFA Dist	[Measurements List: L2]	Topographical modifier: Distal (SRT, G-A119)
SFA Mid	[Measurements List: L2]	Topographical modifier: Mid-longitudinal (SRT, G-A188)
SFA Prox	[Measurements List: L2]	Topographical modifier: Proximal (SRT, G-A118)
Left TRUNK [Peripheral Vascular]	Container: Tibioperoneal Trunk (SRT, T-4704A) [Measurements List: L2]	

9.2.8 Artery of Lower Extremity (Right Side)

Label	Code Meaning (Coding Scheme Designator, Code Value)	Modifiers
Artery of Lower Extremity (Right Side)	Finding Site: Artery of Lower Extremity (SRT, T-47040)	Laterality: Right (SRT, G-A100)
Right ATA [Peripheral Vascular]	Container: Anterior Tibial Artery (SRT, T-47700) [Measurements List: L2]	
Right CFA [Peripheral Vascular]	Container: Common Femoral Artery (SRT, T-47400) [Measurements List: L2]	
Right CIA [Peripheral Vascular]	Container: Common Iliac Artery (SRT, T-46710) [Measurements List: L2]	
Right DPA [Peripheral Vascular]	Container: Dorsalis Pedis Artery (SRT, T-47741) [Measurements List: L2]	
Right EIA [Peripheral Vascular]	Container: External Iliac Artery (SRT, T-46910) [Measurements List: L2]	
Right PER A [Peripheral Vascular]	Container: Peroneal Artery (SRT, T-47630) [Measurements List: L2]	
Right POP A [Peripheral Vascular]	Container: Popliteal Artery (SRT, T-47500) [Measurements List: L2]	
Right PTA [Peripheral Vascular]	Container: Posterior Tibial Artery (SRT, T-47600) [Measurements List: L2]	
Right PFA [Peripheral Vascular]	Container: Profunda Femoris Artery (SRT, T-47440) [Measurements List: L2]	
Right SFA [Peripheral Vascular]	Container: Superficial Femoral Artery (SRT, T-47403)	
SFA Dist	[Measurements List: L2]	Topographical modifier: Distal (SRT, G-A119)
SFA Mid	[Measurements List: L2]	Topographical modifier: Mid-longitudinal (SRT, G-A188)
SFA Prox	[Measurements List: L2]	Topographical modifier: Proximal (SRT, G-A118)
Right TRUNK [Peripheral Vascular]	Container: Tibioperoneal Trunk (SRT, T-4704A) [Measurements List: L2]	

9.3 Appendix C: Adult Echocardiography Structured Report

This appendix lists the DICOM Structured Report (SR) mappings used in the Echocardiography Structured Reports of X Family DICOM SR files.

The mappings are organized in a manner similar to the DICOM SR Templates as described in PS 3.16-2011 of the DICOM Standard. The "Label" column identifies the on-screen label associated with a measurement and consists of the "Grouping Heading: Measurement Label". All private code values use the Coding Scheme Designator "99SIEMENSUS".

Measurements from private measurement packages are identified by the concept modifier:

HAS CONCEPT MOD (MeasPackage, 99SIEMENSUS, "Measurement Package Membership")

The Adult Echocardiography Report mappings follow the DICOM SR Template TID 5200: Echocardiography Procedure Report, except where noted.

Notation:

< … > indicates that the description is not the actual text displayed
[…] is additional information

9.3.1 Patient Characteristics

Label	Code Meaning (Coding Scheme Designator, Code Value)	Modifiers
Patient Characteristics	Container: Patient Characteristics (DCM, 121118)	
Blood Pressure SYS:	Systolic Blood Pressure (SRT, F-008EC)	
DIA:	Diastolic Blood Pressure (SRT, F-008ED)	
BSA	Body Surface Area (LN, 8277-6)	[Based on BSA (DuBois) = 0.007184*WT^0.425*HT^0.725]

9.3.2 Left Ventricle

Label	Code Meaning (Coding Scheme Designator, Code Value)	Modifiers
Left Ventricle	Finding Site: Left Ventricle (SRT, T-32600)	
Aortic Valve: CI	Cardiac Index (SRT, F-32110)	Finding Site: Left Ventricle Outflow Tract (SNM3, T-32650) Measurement Method: Doppler Volume Flow (DCM, 125219)
Bi-Plane: CI	Cardiac Index (SRT, F-32110)	Image Mode: 2D mode (SRT, G-03A2) Measurement Method: Area-Length Biplane (DCM, 125204)

Label	Code Meaning (Coding Scheme Designator, Code Value)	Modifiers
Cubed(2D): CI	Cardiac Index (SRT, F-32110)	Image Mode: 2D mode (SRT, G-03A2) Measurement Method: Cube Method (DCM, 125206)
Teichholz(2D): CI	Cardiac Index (SRT, F-32110)	Image Mode: 2D mode (SRT, G-03A2) Measurement Method: Teichholz (DCM, 125209)
LV/Cubed(M): CI	Cardiac Index (SRT, F-32110)	Image Mode: M-Mode (SRT, G-0394) Measurement Method: Cube Method (DCM, 125206)
LV/Teich(M): CI	Cardiac Index (SRT, F-32110)	Image Mode: M-Mode (SRT, G-0394) Measurement Method: Teichholz (DCM, 125209)
Simpson BP: CI4	Cardiac Index (SRT, F-32110)	Image View: Apical Four Chamber (SRT, G-A19C) Measurement Method: Method of Disks, Biplane (DCM, 125207)
Simpson SP: CI	Cardiac Index (SRT, F-32110)	Image View: Apical Four Chamber (SRT, G-A19C) Measurement Method: Method of Disks, Single Plane (DCM, 125208)
Simpson BP: CI2	Cardiac Index (SRT, F-32110)	Image View: Apical Two Chamber (SRT, G-A19B) Measurement Method: Method of Disks, Biplane (DCM, 125207)
Simpson BP: CI	Cardiac Index (SRT, F-32110)	Measurement Method: Method of Disks, Biplane (DCM, 125207)
Aortic Valve: CO	Cardiac Output (SRT, F-32100)	Finding Site: Left Ventricle Outflow Tract (SNM3, T-32650) Measurement Method: Doppler Volume Flow (DCM, 125219)
Mitral Valve: CO	Cardiac Output (SRT, F-32100)	Finding Site: Left Ventricle Outflow Tract (SNM3, T-32650) Image Mode: Doppler Mode (99SIEMENSUS, DOPPLER) Measurement Method: Doppler Volume Flow (DCM, 125219)
Bi-Plane: CO	Cardiac Output (SRT, F-32100)	Image Mode: 2D mode (SRT, G-03A2) Measurement Method: Area-Length Biplane (DCM, 125204)
Cubed(2D): CO	Cardiac Output (SRT, F-32100)	Image Mode: 2D mode (SRT, G-03A2) Measurement Method: Cube Method (DCM, 125206)
Teichholz(2D): CO	Cardiac Output (SRT, F-32100)	Image Mode: 2D mode (SRT, G-03A2) Measurement Method: Teichholz (DCM, 125209)
LV/Cubed(M): CO	Cardiac Output (SRT, F-32100)	Image Mode: M-Mode (SRT, G-0394) Measurement Method: Cube Method (DCM, 125206)
LV/Teich (M): CO	Cardiac Output (SRT, F-32100)	Image Mode: M-Mode (SRT, G-0394) Measurement Method: Teichholz (DCM, 125209)

Label	Code Meaning (Coding Scheme Designator, Code Value)	Modifiers
Simpson BP: CO4	Cardiac Output (SRT, F-32100)	Image View: Apical Four Chamber (SRT, G-A19C) Measurement Method: Method of Disks, Biplane (DCM, 125207)
Simpson SP: CO	Cardiac Output (SRT, F-32100)	Image View: Apical Four Chamber (SRT, G-A19C) Measurement Method: Method of Disks, Single Plane (DCM, 125208)
Simpson BP: CO2	Cardiac Output (SRT, F-32100)	Image View: Apical Two Chamber (SRT, G-A19B) Measurement Method: Method of Disks, Biplane (DCM, 125207)
Simpson BP: CO	Cardiac Output (SRT, F-32100)	Measurement Method: Method of Disks, Biplane (DCM, 125207)
Aortic Valve: LVOT diam Mitral Valve: LVOT diam	Cardiovascular Orifice Diameter (SRT, G-038F)	Finding Site: Left Ventricle Outflow Tract (SNM3, T-32650)
Bi-Plane: HR	Heart Rate (LN, 8867-4)	Image Mode : 2D mode (SRT, G-03A2) Measurement Method: Area-Length Biplane (DCM, 125204)
Cubed(2D): HR	Heart Rate (LN, 8867-4)	Image Mode: 2D mode (SRT, G-03A2) Measurement Method: Cube Method (DCM, 125206)
Single Plane: HR	Heart Rate (LN, 8867-4)	Image Mode: 2D mode (SRT, G-03A2) Measurement Method: Area-Length Single Plane (DCM, 125205)
Teichholz(2D): HR	Heart Rate (LN, 8867-4)	Image Mode: 2D mode (SRT, G-03A2) Measurement Method: Teichholz (DCM, 125209)
LV/Cubed(M): HR	Heart Rate (LN, 8867-4)	Image Mode: M-Mode (SRT, G-0394) Measurement Method: Cube Method (DCM, 125206)
LV/Teich (M): HR	Heart Rate (LN, 8867-4)	Image Mode: M-Mode (SRT, G-0394) Measurement Method: Teichholz (DCM, 125209)
Simpson BP: HR	Heart Rate (LN, 8867-4)	Measurement Method: Method of Disks, Biplane (DCM, 125207)
Simpson SP: HR	Heart Rate (LN, 8867-4)	Measurement Method: Method of Disks, Single Plane (DCM, 125208)
Cubed(2D): IVSd	Interventricular Septum Diastolic Thickness (LN, 18154-5)	Image Mode: 2D mode (SRT, G-03A2) Measurement Method: Cube Method (DCM, 125206)
Teichholz(2D): IVSd	Interventricular Septum Diastolic Thickness (LN, 18154-5)	Image Mode: 2D mode (SRT, G-03A2) Measurement Method: Teichholz (DCM, 125209)
LV/Cubed(M): IVSd	Interventricular Septum Diastolic Thickness (LN, 18154-5)	Image Mode: M-Mode (SRT, G-0394) Measurement Method: Cube Method (DCM, 125206)

Label	Code Meaning (Coding Scheme Designator, Code Value)	Modifiers
LV/Teich (M): IVSd	Interventricular Septum Diastolic Thickness (LN, 18154-5)	Image Mode: M-Mode (SRT, G-0394) Measurement Method: Teichholz (DCM, 125209)
Cubed(2D): IVSs	Interventricular Septum Systolic Thickness (LN, 18158-6)	Image Mode: 2D mode (SRT, G-03A2) Measurement Method: Cube Method (DCM, 125206)
Teichholz(2D): IVSs	Interventricular Septum Systolic Thickness (LN, 18158-6)	Image Mode: 2D mode (SRT, G-03A2) Measurement Method: Teichholz (DCM, 125209)
LV/Cubed(M): IVSs	Interventricular Septum Systolic Thickness (LN, 18158-6)	Image Mode: M-Mode (SRT, G-0394) Measurement Method: Cube Method (DCM, 125206)
LV/Teich (M): IVSs	Interventricular Septum Systolic Thickness (LN, 18158-6)	Image Mode: M-Mode (SRT, G-0394) Measurement Method: Teichholz (DCM, 125209)
LV Mass A-L: LVL	Left Ventricle diastolic major axis (LN, 18077-8)	Image Mode: 2D mode (SRT, G-03A2)
Single Plane: LVLd apical	Left Ventricle diastolic major axis (LN, 18077-8)	Image Mode: 2D mode (SRT, G-03A2) Measurement Method: Area-Length Single Plane (DCM, 125205)
LV Mass A-L: A Sax Epi	Left Ventricle Epicardial Diastolic Area, psax pap view (SRT, G-0379)	Image Mode: 2D mode (SRT, G-03A2) Measurement Method: Left Ventricle Mass by Area Length (99SIEMENSUS, LVMassAL)
LV Mass T-E: A Sax Epi	Left Ventricle Epicardial Diastolic Area, psax pap view (SRT, G-0379)	Measurement Method: Left Ventricle Mass by Truncated Ellipse (DCM, 125222)
Bi-Plane: LVIDd	Left Ventricle Internal End Diastolic Dimension (LN, 29436-3)	Image Mode : 2D mode (SRT, G-03A2) Measurement Method: Area-Length Biplane (DCM, 125204)
Cubed(2D): LVIDd	Left Ventricle Internal End Diastolic Dimension (LN, 29436-3)	Image Mode: 2D mode (SRT, G-03A2) Measurement Method: Cube Method (DCM, 125206)
Teichholz(2D): LVIDd	Left Ventricle Internal End Diastolic Dimension (LN, 29436-3)	Image Mode: 2D mode (SRT, G-03A2) Measurement Method: Teichholz (DCM, 125209)
LV/Cubed(M): LVIDd	Left Ventricle Internal End Diastolic Dimension (LN, 29436-3)	Image Mode: M-Mode (SRT, G-0394) Measurement Method: Cube Method (DCM, 125206)
LV/Teich (M): LVIDd	Left Ventricle Internal End Diastolic Dimension (LN, 29436-3)	Image Mode: M-Mode (SRT, G-0394) Measurement Method: Teichholz (DCM, 125209)
Bi-Plane: LVIDs	Left Ventricle Internal Systolic Dimension (LN, 29438-9)	Image Mode : 2D mode (SRT, G-03A2) Measurement Method: Area-Length Biplane (DCM, 125204)
Cubed(2D): LVIDs	Left Ventricle Internal Systolic Dimension (LN, 29438-9)	Image Mode: 2D mode (SRT, G-03A2) Measurement Method: Cube Method (DCM, 125206)
Teichholz(2D): LVIDs	Left Ventricle Internal Systolic Dimension (LN, 29438-9)	Image Mode: 2D mode (SRT, G-03A2) Measurement Method: Teichholz (DCM, 125209)

Label	Code Meaning (Coding Scheme Designator, Code Value)	Modifiers
LV/Cubed(M): LVIDs	Left Ventricle Internal Systolic Dimension (LN, 29438-9)	Image Mode: M-Mode (SRT, G-0394) Measurement Method: Cube Method (DCM, 125206)
LV/Teich (M): LVIDs	Left Ventricle Internal Systolic Dimension (LN, 29438-9)	Image Mode: M-Mode (SRT, G-0394) Measurement Method: Teichholz (DCM, 125209)
LV Mass A-L: LV Mass	Left Ventricle Mass (LN, 18087-7)	Image Mode: 2D mode (SRT, G-03A2) Measurement Method: Left Ventricle Mass by Area Length (99SIEMENSUS, LVMassAL)
LV Mass A-L: LV Mass-I	Left Ventricle Mass (LN, 18087-7)	Image Mode: 2D mode (SRT, G-03A2) Index: Body Surface Area (LN, 8277-6) Measurement Method: Left Ventricle Mass by Area Length (99SIEMENSUS, LVMassAL)
LV/Cubed(M): LV Mass	Left Ventricle Mass (LN, 18087-7)	Image Mode: M-Mode (SRT, G-0394) Measurement Method: Cube Method (DCM, 125206)
LV/Cubed(M): LV Mass-I	Left Ventricle Mass (LN, 18087-7)	Image Mode: M-Mode (SRT, G-0394) Index: Body Surface Area (LN, 8277-6) Measurement Method: Cube Method (DCM, 125206)
LV/Teich (M): LV Mass	Left Ventricle Mass (LN, 18087-7)	Image Mode: M-Mode (SRT, G-0394) Measurement Method: Teichholz (DCM, 125209)
LV/Teich (M): LV Mass-I	Left Ventricle Mass (LN, 18087-7)	Image Mode: M-Mode (SRT, G-0394) Index: Body Surface Area (LN, 8277-6) Measurement Method: Teichholz (DCM, 125209)
LV Mass T-E: LV Mass-I	Left Ventricle Mass (LN, 18087-7)	Index: Body Surface Area (LN, 8277-6) Measurement Method: Left Ventricle Mass by Truncated Ellipse (DCM, 125222)
LV Mass T-E: LV Mass	Left Ventricle Mass (LN, 18087-7)	Measurement Method: Left Ventricle Mass by Truncated Ellipse (DCM, 125222)
LV/Cubed(M): LV Mass-c	Left Ventricle Mass corrected (99SIEMENSUS, CA_LV_MASSc)	Image Mode: M-Mode (SRT, G-0394) Measurement Method: Cube Method (DCM, 125206)
LV/Teich (M): LV Mass-c	Left Ventricle Mass corrected (99SIEMENSUS, CA_LV_MASSc)	Image Mode: M-Mode (SRT, G-0394) Measurement Method: Teichholz (DCM, 125209)
Cubed(2D): LVPWd	Left Ventricle Posterior Wall Diastolic Thickness (LN, 18152-9)	Image Mode: 2D mode (SRT, G-03A2) Measurement Method: Cube Method (DCM, 125206)
Teichholz(2D): LVPWd	Left Ventricle Posterior Wall Diastolic Thickness (LN, 18152-9)	Image Mode: 2D mode (SRT, G-03A2) Measurement Method: Teichholz (DCM, 125209)
LV/Cubed(M): LVPWd	Left Ventricle Posterior Wall Diastolic Thickness (LN, 18152-9)	Image Mode: M-Mode (SRT, G-0394) Measurement Method: Cube Method (DCM, 125206)

Label	Code Meaning (Coding Scheme Designator, Code Value)	Modifiers
LV/Teich (M): LVPWd	Left Ventricle Posterior Wall Diastolic Thickness (LN, 18152-9)	Image Mode: M-Mode (SRT, G-0394) Measurement Method: Teichholz (DCM, 125209)
Cubed(2D): LVPWs	Left Ventricle Posterior Wall Systolic Thickness (LN, 18156-0)	Image Mode: 2D mode (SRT, G-03A2) Measurement Method: Cube Method (DCM, 125206)
Teichholz(2D): LVPWs	Left Ventricle Posterior Wall Systolic Thickness (LN, 18156-0)	Image Mode: 2D mode (SRT, G-03A2) Measurement Method: Teichholz (DCM, 125209)
LV/Cubed(M): LVPWs	Left Ventricle Posterior Wall Systolic Thickness (LN, 18156-0)	Image Mode: M-Mode (SRT, G-0394) Measurement Method: Cube Method (DCM, 125206)
LV/Teich (M): LVPWs	Left Ventricle Posterior Wall Systolic Thickness (LN, 18156-0)	Image Mode: M-Mode (SRT, G-0394) Measurement Method: Teichholz (DCM, 125209)
LV Mass T-E: a	Left Ventricle Semi-major Axis Diastolic Dimension (SRT, G-0377)	Measurement Method: Left Ventricle Mass by Truncated Ellipse (DCM, 125222)
Single Plane: LVAs apical	Left Ventricle Systolic Area (SRT, G-0374)	Image Mode: 2D mode (SRT, G-03A2) Measurement Method: Area-Length Single Plane (DCM, 125205)
Single Plane: LVLs apical	Left Ventricle systolic major axis (LN, 18076-0)	Image Mode: 2D mode (SRT, G-03A2) Measurement Method: Area-Length Single Plane (DCM, 125205)
LV Mass T-E: d	Left Ventricle Truncated Semi-major Axis Diastolic Dimension (SRT, G-0378)	Measurement Method: Left Ventricle Mass by Truncated Ellipse (DCM, 125222)
Bi-Plane: LVAd apical	Left Ventricular Diastolic Area (SRT, G-0375)	Image Mode : 2D mode (SRT, G-03A2) Measurement Method: Area-Length Biplane (DCM, 125204)
Bi-Plane: LVAd sxMV	Left Ventricular Diastolic Area (SRT, G-0375)	Image Mode : 2D mode (SRT, G-03A2) Image View : Parasternal Short Axis at the Mitral Valve Level (SRT, G-039A) Measurement Method: Area-Length Biplane (DCM, 125204)
LV Mass A-L: A Sax Endo	Left Ventricular Diastolic Area (SRT, G-0375)	Image Mode: 2D mode (SRT, G-03A2) Image View: Parasternal Short Axis at the Papillary Muscle Level (SRT, G-039B) Measurement Method: Left Ventricle Mass by Area Length (99SIEMENSUS, LVMassAL)
Single Plane: LVAd apical	Left Ventricular Diastolic Area (SRT, G-0375)	Image Mode: 2D mode (SRT, G-03A2) Measurement Method: Area-Length Single Plane (DCM, 125205)

Label	Code Meaning (Coding Scheme Designator, Code Value)	Modifiers
LV Mass T-E: A Sax Endo	Left Ventricular Diastolic Area (SRT, G-0375)	Image View: Parasternal Short Axis at the Papillary Muscle Level (SRT, G-039B) Measurement Method: Left Ventricle Mass by Truncated Ellipse (DCM, 125222)
Bi-Plane: EF	Left Ventricular Ejection Fraction (LN, 18043-0)	Image Mode : 2D mode (SRT, G-03A2) Measurement Method: Area-Length Biplane (DCM, 125204)
Cubed(2D): EF	Left Ventricular Ejection Fraction (LN, 18043-0)	Image Mode: 2D mode (SRT, G-03A2) Measurement Method: Cube Method (DCM, 125206)
Teichholz(2D): EF	Left Ventricular Ejection Fraction (LN, 18043-0)	Image Mode: 2D mode (SRT, G-03A2) Measurement Method: Teichholz (DCM, 125209)
LV/Cubed(M): EF	Left Ventricular Ejection Fraction (LN, 18043-0)	Image Mode: M-Mode (SRT, G-0394) Measurement Method: Cube Method (DCM, 125206)
LV/Teich (M): EF	Left Ventricular Ejection Fraction (LN, 18043-0)	Image Mode: M-Mode (SRT, G-0394) Measurement Method: Teichholz (DCM, 125209)
Simpson BP: EF4	Left Ventricular Ejection Fraction (LN, 18043-0)	Image View: Apical Four Chamber (SRT, G-A19C) Measurement Method: Method of Disks, Biplane (DCM, 125207)
Simpson SP: EF	Left Ventricular Ejection Fraction (LN, 18043-0)	Image View: Apical Four Chamber (SRT, G-A19C) Measurement Method: Method of Disks, Single Plane (DCM, 125208)
Simpson BP: EF2	Left Ventricular Ejection Fraction (LN, 18043-0)	Image View: Apical Two Chamber (SRT, G-A19B) Measurement Method: Method of Disks, Biplane (DCM, 125207)
Simpson BP: EF	Left Ventricular Ejection Fraction (LN, 18043-0)	Measurement Method: Method of Disks, Biplane (DCM, 125207)
Bi-Plane: EDV	Left Ventricular End Diastolic Volume (LN, 18026-5)	Image Mode : 2D mode (SRT, G-03A2) Measurement Method: Area-Length Biplane (DCM, 125204)
Cubed(2D): EDV	Left Ventricular End Diastolic Volume (LN, 18026-5)	Image Mode: 2D mode (SRT, G-03A2) Measurement Method: Cube Method (DCM, 125206)
Single Plane: EDV	Left Ventricular End Diastolic Volume (LN, 18026-5)	Image Mode: 2D mode (SRT, G-03A2) Measurement Method: Area-Length Single Plane (DCM, 125205)
Teichholz(2D): EDV	Left Ventricular End Diastolic Volume (LN, 18026-5)	Image Mode: 2D mode (SRT, G-03A2) Measurement Method: Teichholz (DCM, 125209)
LV/Cubed(M): EDV	Left Ventricular End Diastolic Volume (LN, 18026-5)	Image Mode: M-Mode (SRT, G-0394) Measurement Method: Cube Method (DCM, 125206)

Label	Code Meaning (Coding Scheme Designator, Code Value)	Modifiers
LV/Teich (M): EDV	Left Ventricular End Diastolic Volume (LN, 18026-5)	Image Mode: M-Mode (SRT, G-0394) Measurement Method: Teichholz (DCM, 125209)
Simpson BP: EDV4	Left Ventricular End Diastolic Volume (LN, 18026-5)	Image View: Apical Four Chamber (SRT, G-A19C) Measurement Method: Method of Disks, Biplane (DCM, 125207)
Simpson SP: EDV	Left Ventricular End Diastolic Volume (LN, 18026-5)	Image View: Apical Four Chamber (SRT, G-A19C) Measurement Method: Method of Disks, Single Plane (DCM, 125208)
Simpson BP: EDV2	Left Ventricular End Diastolic Volume (LN, 18026-5)	Image View: Apical Two Chamber (SRT, G-A19B) Measurement Method: Method of Disks,Biplane (DCM, 125207)
Simpson BP: EDV	Left Ventricular End Diastolic Volume (LN, 18026-5)	Measurement Method: Method of Disks, Biplane (DCM, 125207)
Bi-Plane: ESV	Left Ventricular End Systolic Volume (LN, 18148-7)	Image Mode : 2D mode (SRT, G-03A2) Measurement Method: Area-Length Biplane (DCM, 125204)
Cubed(2D): ESV	Left Ventricular End Systolic Volume (LN, 18148-7)	Image Mode: 2D mode (SRT, G-03A2) Measurement Method: Cube Method (DCM, 125206)
Single Plane: ESV	Left Ventricular End Systolic Volume (LN, 18148-7)	Image Mode: 2D mode (SRT, G-03A2) Measurement Method: Area-Length Single Plane (DCM, 125205)
Teichholz(2D): ESV	Left Ventricular End Systolic Volume (LN, 18148-7)	Image Mode: 2D mode (SRT, G-03A2) Measurement Method: Teichholz (DCM, 125209)
LV/Cubed(M): ESV	Left Ventricular End Systolic Volume (LN, 18148-7)	Image Mode: M-Mode (SRT, G-0394) Measurement Method: Cube Method (DCM, 125206)
LV/Teich (M): ESV	Left Ventricular End Systolic Volume (LN, 18148-7)	Image Mode: M-Mode (SRT, G-0394) Measurement Method: Teichholz (DCM, 125209)
Simpson BP: ESV4	Left Ventricular End Systolic Volume (LN, 18148-7)	Image View: Apical Four Chamber (SRT, G-A19C) Measurement Method: Method of Disks, Biplane (DCM, 125207)
Simpson SP: ESV	Left Ventricular End Systolic Volume (LN, 18148-7)	Image View: Apical Four Chamber (SRT, G-A19C) Measurement Method: Method of Disks, Single Plane (DCM, 125208)
Simpson BP: ESV2	Left Ventricular End Systolic Volume (LN, 18148-7)	Image View: Apical Two Chamber (SRT, G-A19B) Measurement Method: Method of Disks, Biplane (DCM, 125207)
Simpson BP: ESV	Left Ventricular End Systolic Volume (LN, 18148-7)	Measurement Method: Method of Disks, Biplane (DCM, 125207)

Label	Code Meaning (Coding Scheme Designator, Code Value)	Modifiers
Cubed(2D): FS	Left Ventricular Fractional Shortening (LN, 18051-3)	Image Mode: 2D mode (SRT, G-03A2) Measurement Method: Cube Method (DCM, 125206)
Teichholz(2D): FS	Left Ventricular Fractional Shortening (LN, 18051-3)	Image Mode: 2D mode (SRT, G-03A2) Measurement Method: Teichholz (DCM, 125209)
LV/Cubed(M): FS	Left Ventricular Fractional Shortening (LN, 18051-3)	Image Mode: M-Mode (SRT, G-0394) Measurement Method: Cube Method (DCM, 125206)
LV/Teich (M): FS	Left Ventricular Fractional Shortening (LN, 18051-3)	Image Mode: M-Mode (SRT, G-0394) Measurement Method: Teichholz (DCM, 125209)
Mitral Valve: LVIMP Tei Index: LVIMP	Left Ventricular Index of Myocardial Performance (SRT, G-037F)	
Aortic Valve: IVRT Mitral Valve: IVRT	Left Ventricular Isovolumic Relaxation Time (LN, 18071-1)	
DTI: Ea(l)	Left Ventricular Peak Early Diastolic Tissue Velocity (SRT, G-037A)	Finding Site: Lateral Mitral Annulus (SRT, G-0392)
DTI: Ea(m)	Left Ventricular Peak Early Diastolic Tissue Velocity (SRT, G-037A)	Finding Site: Medial Mitral Annulus (SRT, G-0391)
DTI: Sa(l)	Left Ventricular Peak Systolic Tissue Velocity (SRT, G-037D)	Finding Site: Lateral Mitral Annulus (SRT, G-0392)
DTI: Sa(m)	Left Ventricular Peak Systolic Tissue Velocity (SRT, G-037D)	Finding Site: Medial Mitral Annulus (SRT, G-0391)
Bi-Plane: LVAs apical	Left Ventricular Systolic Area (SRT, G-0374)	Image Mode : 2D mode (SRT, G-03A2) Measurement Method: Area-Length Biplane (DCM, 125204)
Bi-Plane: LVAs sxMV	Left Ventricular Systolic Area (SRT, G-0374)	Image Mode : 2D mode (SRT, G-03A2) Image View : Parasternal Short Axis at the Mitral Valve Level (SRT, G-039A) Measurement Method: Area-Length Biplane (DCM, 125204)
Simpson BP: difD(2ch)	LV Difference (99SIEMENSUS, CA_LV_DIF)	Cardiac Cycle Point: End Diastole (SRT, F-32011) Measurement Method: Method of Disks, Biplane (DCM, 125207)
Simpson BP: difS(2ch)	LV Difference (99SIEMENSUS, CA_LV_DIF)	Cardiac Cycle Point: F-32011, SRT, End Systole Measurement Method: Method of Disks, Biplane (DCM, 125207)
DTI: Aa(l)	LV Peak Diastolic Tissue Velocity During Atrial Systole (SRT, G-037C)	Finding Site: Lateral Mitral Annulus (SRT, G-0392)
DTI: Aa(m)	LV Peak Diastolic Tissue Velocity During Atrial Systole (SRT, G-037C)	Finding Site: Medial Mitral Annulus (SRT, G-0391)
Aortic Valve: LVOT PGmean	Mean Gradient (LN, 20256-4)	Finding Site: Left Ventricle Outflow Tract (SNM3, T-32650) Flow Direction: Antegrade Flow (SRT, R-42047)

Label	Code Meaning (Coding Scheme Designator, Code Value)	Modifiers
Aortic Valve: LVOT Vmean	Mean Velocity (LN, 20352-1)	Finding Site: Left Ventricle Outflow Tract (SNM3, T-32650) Flow Direction: Antegrade Flow (SRT, R-42047)
DTI: ARa(l)	Mitral Valve DTI acceleration rate of Ea (99SIEMENSUS, CA_MV_ARa)	Finding Site: Lateral Mitral Annulus (SRT, G-0392)
DTI: ARa(m)	Mitral Valve DTI acceleration rate of Ea (99SIEMENSUS, CA_MV_ARa)	Finding Site: Medial Mitral Annulus (SRT, G-0391)
DTI: ATa(l)	Mitral Valve DTI acceleration time of Ea (99SIEMENSUS, CA_MV_ATa)	Finding Site: Lateral Mitral Annulus (SRT, G-0392)
DTI: ATa(m)	Mitral Valve DTI acceleration time of Ea (99SIEMENSUS, CA_MV_ATa)	Finding Site: Medial Mitral Annulus (SRT, G-0391)
DTI: DRa(l)	Mitral Valve DTI deceleration rate of Ea (99SIEMENSUS, CA_MV_DRa)	Finding Site: Lateral Mitral Annulus (SRT, G-0392)
DTI: DRa(m)	Mitral Valve DTI deceleration rate of Ea (99SIEMENSUS, CA_MV_DRa)	Finding Site: Medial Mitral Annulus (SRT, G-0391)
DTI: DTa(l)	Mitral Valve DTI deceleration time of Ea (99SIEMENSUS, CA_MV_DTa)	Finding Site: Lateral Mitral Annulus (SRT, G-0392)
DTI: DTa(m)	Mitral Valve DTI deceleration time of Ea (99SIEMENSUS, CA_MV_DTa)	Finding Site: Medial Mitral Annulus (SRT, G-0391)
DTI: Ea/Aa(l)	Mitral Valve DTI Ea to Aa Ratio (99SIEMENSUS, CA_MV_Ea2Aa)	Finding Site: Lateral Mitral Annulus (SRT, G-0392)
DTI: Ea/Aa(m)	Mitral Valve DTI Ea to Aa Ratio (99SIEMENSUS, CA_MV_Ea2Aa)	Finding Site: Medial Mitral Annulus (SRT, G-0391)
LV Mass A-L: t	Myocard. thickn. calc. from short axis epicard. & cavity areas (99SIEMENSUS, CA_LV_MyoTh)	Image Mode: 2D mode (SRT, G-03A2)
LV Mass T-E: t	Myocard. thickn. calc. from short axis epicard. & cavity areas (99SIEMENSUS, CA_LV_MyoTh)	Measurement Method: Left Ventricle Mass by Truncated Ellipse (DCM, 125222)
Aortic Valve: LVOT PGmax	Peak Gradient (LN, 20247-3)	Finding Site: Left Ventricle Outflow Tract (SNM3, T-32650) Flow Direction: Antegrade Flow (SRT, R-42047)
Aortic Valve: VSD PGmax	Peak Gradient (LN, 20247-3)	Finding Site: Ventricular Septal Defect (SRT, D4-31150)
Aortic Valve: LVOT Vmax	Peak Systolic Velocity (LN, 11726-7)	Finding Site: Left Ventricle Outflow Tract (SNM3, T-32650) Flow Direction: Antegrade Flow (SRT, R-42047)
Aortic Valve: VSD Vmax	Peak Systolic Velocity (LN, 11726-7)	Finding Site: Ventricular Septal Defect (SRT, D4-31150)
DTI: E/Ea(l) Mitral Valve: E/Ea(l)	Ratio of MV Peak Velocity to LV Peak Tissue Velocity E-Wave (SRT, G-037B)	Finding Site: Lateral Mitral Annulus (SRT, G-0392)
DTI: E/Ea(m) Mitral Valve: E/Ea(m)	Ratio of MV Peak Velocity to LV Peak Tissue Velocity E-Wave (SRT, G-037B)	Finding Site: Medial Mitral Annulus (SRT, G-0391)

Label	Code Meaning (Coding Scheme Designator, Code Value)	Modifiers
LV Mass T-E: b	Short axis radius calculated from short axis cavity area (99SIEMENSUS, CA_LV_RadSAX)	Measurement Method: Left Ventricle Mass by Truncated Ellipse (DCM, 125222)
Aortic Valve: SI	Stroke Index (SRT, F-00078)	Finding Site: Left Ventricle Outflow Tract (SNM3, T-32650) Measurement Method: Doppler Volume Flow (DCM, 125219)
Bi-Plane: SI	Stroke Index (SRT, F-00078)	Image Mode : 2D mode (SRT, G-03A2) Measurement Method: Area-Length Biplane (DCM, 125204)
Cubed(2D): SI	Stroke Index (SRT, F-00078)	Image Mode: 2D mode (SRT, G-03A2) Measurement Method: Cube Method (DCM, 125206)
Teichholz(2D): SI	Stroke Index (SRT, F-00078)	Image Mode: 2D mode (SRT, G-03A2) Measurement Method: Teichholz (DCM, 125209)
LV/Cubed(M): SI	Stroke Index (SRT, F-00078)	Image Mode: M-Mode (SRT, G-0394) Measurement Method: Cube Method (DCM, 125206)
LV/Teich (M): SI	Stroke Index (SRT, F-00078)	Image Mode: M-Mode (SRT, G-0394) Measurement Method: Teichholz (DCM, 125209)
Simpson BP: SI4	Stroke Index (SRT, F-00078)	Image View: Apical Four Chamber (SRT, G-A19C) Measurement Method: Method of Disks, Biplane (DCM, 125207)
Simpson SP: SI	Stroke Index (SRT, F-00078)	Image View: Apical Four Chamber (SRT, G-A19C) Measurement Method: Method of Disks, Single Plane (DCM, 125208)
Simpson BP: SI2	Stroke Index (SRT, F-00078)	Image View: Apical Two Chamber (SRT, G-A19B) Measurement Method: Method of Disks, Biplane (DCM, 125207)
Simpson BP: SI	Stroke Index (SRT, F-00078)	Measurement Method: Method of Disks, Biplane (DCM, 125207)
Aortic Valve: SV	Stroke Volume (SRT, F-32120)	Finding Site: Left Ventricle Outflow Tract (SNM3, T-32650) Measurement Method: Doppler Volume Flow (DCM, 125219)
Mitral Valve: SV	Stroke Volume (SRT, F-32120)	Finding Site: Left Ventricle Outflow Tract (SNM3, T-32650) Image Mode: Doppler Mode (99SIEMENSUS, DOPPLER) Measurement Method: Doppler Volume Flow (DCM, 125219)
Bi-Plane: SV	Stroke Volume (SRT, F-32120)	Image Mode : 2D mode (SRT, G-03A2) Measurement Method: Area-Length Biplane (DCM, 125204)
Cubed(2D): SV	Stroke Volume (SRT, F-32120)	Image Mode: 2D mode (SRT, G-03A2) Measurement Method: Cube Method (DCM, 125206)

Label	Code Meaning (Coding Scheme Designator, Code Value)	Modifiers
Teichholz(2D): SV	Stroke Volume (SRT, F-32120)	Image Mode: 2D mode (SRT, G-03A2) Measurement Method: Teichholz (DCM, 125209)
LV/Cubed(M): SV	Stroke Volume (SRT, F-32120)	Image Mode: M-Mode (SRT, G-0394) Measurement Method: Cube Method (DCM, 125206)
LV/Teich (M): SV	Stroke Volume (SRT, F-32120)	Image Mode: M-Mode (SRT, G-0394) Measurement Method: Teichholz (DCM, 125209)
Simpson BP: SV4	Stroke Volume (SRT, F-32120)	Image View: Apical Four Chamber (SRT, G-A19C) Measurement Method: Method of Disks, Biplane (DCM, 125207)
Simpson SP: SV	Stroke Volume (SRT, F-32120)	Image View: Apical Four Chamber (SRT, G-A19C) Measurement Method: Method of Disks, Single Plane (DCM, 125208)
Simpson BP: SV2	Stroke Volume (SRT, F-32120)	Image View: Apical Two Chamber (SRT, G-A19B) Measurement Method: Method of Disks, Biplane (DCM, 125207)
Simpson BP: SV	Stroke Volume (SRT, F-32120)	Measurement Method: Method of Disks, Biplane (DCM, 125207)
LV/Cubed(M): mVcf	systolic index (99SIEMENSUS, CA_LF_VCF)	Image Mode: M-Mode (SRT, G-0394) Measurement Method: Cube Method (DCM, 125206)
LV/Teich (M): mVcf	systolic index (99SIEMENSUS, CA_LF_VCF)	Image Mode: M-Mode (SRT, G-0394) Measurement Method: Teichholz (DCM, 125209)
Aortic Valve: LVOT VTI Mitral Valve: LVOT VTI	Velocity Time Integral (LN, 20354-7)	Finding Site: Left Ventricle Outflow Tract (SNM3, T-32650) Flow Direction: Antegrade Flow (SRT, R-42047)
Auto Left Heart: LV EF2	Left Ventricular Ejection Fraction (LN, 18043-0)	Image Mode: 2D mode (SRT, G-03A2) Image View: Apical Two Chamber (SRT, G-A19B) Measurement Method: Method of Disks, Biplane (DCM, 125207) Measurement Package Membership: 2D Auto Left Heart Package (99SIEMENSUS, MPAutoLeftHeart)
Auto Left Heart: LV EF4	Left Ventricular Ejection Fraction (LN, 18043-0)	Image Mode: 2D mode (SRT, G-03A2) Image View: Apical Four Chamber (SRT, G-A19C) Measurement Method: Method of Disks, Biplane (DCM, 125207) Measurement Package Membership: 2D Auto Left Heart Package (99SIEMENSUS, MPAutoLeftHeart)

Label	Code Meaning (Coding Scheme Designator, Code Value)	Modifiers
Auto Left Heart: LV EDV2	Left Ventricular End Diastolic Volume (LN, 18026-5)	Image Mode: 2D mode (SRT, G-03A2) Image View: Apical Two Chamber (SRT, G-A19B) Measurement Method: Method of Disks, Biplane (DCM, 125207) Measurement Package Membership: 2D Auto Left Heart Package (99SIEMENSUS, MPAutoLeftHeart)
Auto Left Heart: LV EDV4	Left Ventricular End Diastolic Volume (LN, 18026-5)	Image Mode: 2D mode (SRT, G-03A2) Image View: Apical Four Chamber (SRT, G-A19C) Measurement Method: Method of Disks, Biplane (DCM, 125207) Measurement Package Membership: 2D Auto Left Heart Package (99SIEMENSUS, MPAutoLeftHeart)
Auto Left Heart: LV ESV2	Left Ventricular End Systolic Volume (LN, 18148-7)	Image Mode: 2D mode (SRT, G-03A2) Image View: Apical Two Chamber (SRT, G-A19B) Measurement Method: Method of Disks, Biplane (DCM, 125207) Measurement Package Membership: 2D Auto Left Heart Package (99SIEMENSUS, MPAutoLeftHeart)
Auto Left Heart: LV ESV4	Left Ventricular End Systolic Volume (LN, 18148-7)	Image Mode: 2D mode (SRT, G-03A2) Image View: Apical Four Chamber (SRT, G-A19C) Measurement Method: Method of Disks, Biplane (DCM, 125207) Measurement Package Membership: 2D Auto Left Heart Package (99SIEMENSUS, MPAutoLeftHeart)
AXIUS EF: CO4	Cardiac Output (SRT, F-32100)	Image View: Apical Four Chamber (SRT, G-A19C) Measurement Method: Method of Disks, Biplane (DCM, 125207) Measurement Package Membership: 2D Axius-EF Package (99SIEMENSUS, MP2DAxius-EF)
AXIUS EF: CO2	Cardiac Output (SRT, F-32100)	Image View: Apical Two Chamber (SRT, G-A19B) Measurement Method: Method of Disks, Biplane (DCM, 125207) Measurement Package Membership: 2D Axius-EF Package (99SIEMENSUS, MP2DAxius-EF)

Label	Code Meaning (Coding Scheme Designator, Code Value)	Modifiers
AXIUS EF: HR2	Heart Rate (LN, 8867-4)	Image Mode: 2D mode (SRT, G-03A2) Image View: Apical Two Chamber (SRT, G-A19B) Measurement Method: Method of Disks, Biplane (DCM, 125207) Measurement Package Membership: 2D Axius-EF Package (99SIEMENSUS, MP2DAxius-EF)
AXIUS EF: HR4	Heart Rate (LN, 8867-4)	Image Mode: 2D mode (SRT, G-03A2) Image View: Apical Four Chamber (SRT, G-A19C) Measurement Method: Method of Disks, Biplane (DCM, 125207) Measurement Package Membership: 2D Axius-EF Package (99SIEMENSUS, MP2DAxius-EF)
AXIUS EF: EF2	Left Ventricular Ejection Fraction (LN, 18043-0)	Image Mode: 2D mode (SRT, G-03A2) Image View: Apical Two Chamber (SRT, G-A19B) Measurement Method: Method of Disks, Biplane (DCM, 125207) Measurement Package Membership: 2D Axius-EF Package (99SIEMENSUS, MP2DAxius-EF)
AXIUS EF: EF4	Left Ventricular Ejection Fraction (LN, 18043-0)	Image View: Apical Four Chamber (SRT, G-A19C) Measurement Method: Method of Disks, Biplane (DCM, 125207) Measurement Package Membership: 2D Axius-EF Package (99SIEMENSUS, MP2DAxius-EF)
AXIUS EF: EDV4	Left Ventricular End Diastolic Volume (LN, 18026-5)	Image View: Apical Four Chamber (SRT, G-A19C) Measurement Method: Method of Disks, Biplane (DCM, 125207) Measurement Package Membership: 2D Axius-EF Package (99SIEMENSUS, MP2DAxius-EF)
AXIUS EF: EDV2	Left Ventricular End Diastolic Volume (LN, 18026-5)	Image View: Apical Two Chamber (SRT, G-A19B) Measurement Method: Method of Disks, Biplane (DCM, 125207) Measurement Package Membership: 2D Axius-EF Package (99SIEMENSUS, MP2DAxius-EF)
AXIUS EF: ESV4	Left Ventricular End Systolic Volume (LN, 18148-7)	Image View: Apical Four Chamber (SRT, G-A19C) Measurement Method: Method of Disks, Biplane (DCM, 125207) Measurement Package Membership: 2D Axius-EF Package (99SIEMENSUS, MP2DAxius-EF)

Label	Code Meaning (Coding Scheme Designator, Code Value)	Modifiers
AXIUS EF: ESV2	Left Ventricular End Systolic Volume (LN, 18148-7)	Image View: Apical Two Chamber (SRT, G-A19B) Measurement Method: Method of Disks, Biplane (DCM, 125207) Measurement Package Membership: 2D Axius-EF Package (99SIEMENSUS, MP2DAxius-EF)
AXIUS EF: SV2	Stroke Volume (SRT, F-32120)	Image Mode: 2D mode (SRT, G-03A2) Image View: Apical Two Chamber (SRT, G-A19B) Measurement Method: Method of Disks, Biplane (DCM, 125207) Measurement Package Membership: 2D Axius-EF Package (99SIEMENSUS, MP2DAxius-EF)
AXIUS EF: SV4	Stroke Volume (SRT, F-32120)	Image Mode: 2D mode (SRT, G-03A2) Image View: Apical Four Chamber (SRT, G-A19C) Measurement Method: Method of Disks, Biplane (DCM, 125207) Measurement Package Membership: 2D Axius-EF Package (99SIEMENSUS, MP2DAxius-EF)
Bullet: HR	Heart Rate (LN, 8867-4)	Image Mode : 2D mode (SRT, G-03A2) Measurement Package Membership: 2D Bullet Package (99SIEMENSUS, MP2DBU)
Bullet: LVLd apical	Left Ventricle diastolic major axis (LN, 18077-8)	Image Mode : 2D mode (SRT, G-03A2) Measurement Package Membership: 2D Bullet Package (99SIEMENSUS, MP2DBU)
Bullet: LVLs apical	Left Ventricle systolic major axis (LN, 18076-0)	Image Mode : 2D mode (SRT, G-03A2) Measurement Package Membership: 2D Bullet Package (99SIEMENSUS, MP2DBU)
Bullet: LVAd sxMV	Left Ventricular Diastolic Area (SRT, G-0375)	Image Mode : 2D mode (SRT, G-03A2) Image View : Parasternal Short Axis at the Mitral Valve Level (SRT, G-039A) Measurement Package Membership: 2D Bullet Package (99SIEMENSUS, MP2DBU)
Bullet: EDV	Left Ventricular End Diastolic Volume (LN, 18026-5)	Image Mode : 2D mode (SRT, G-03A2) Measurement Package Membership: 2D Bullet Package (99SIEMENSUS, MP2DBU)
Bullet: ESV	Left Ventricular End Systolic Volume (LN, 18148-7)	Image Mode : 2D mode (SRT, G-03A2) Measurement Package Membership: 2D Bullet Package (99SIEMENSUS, MP2DBU)

Label	Code Meaning (Coding Scheme Designator, Code Value)	Modifiers
Bullet: LVAs sxMV	Left Ventricular Systolic Area (SRT, G-0374)	Image Mode : 2D mode (SRT, G-03A2) Image View : Parasternal Short Axis at the Mitral Valve Level (SRT, G-039A) Measurement Package Membership: 2D Bullet Package (99SIEMENSUS, MP2DBU)
Gibson(2D): CI	Cardiac Index (SRT, F-32110)	Image Mode: 2D mode (SRT, G-03A2) Measurement Package Membership: 2D Gibson Package (99SIEMENSUS, MP2DGIB)
Gibson(2D): CO	Cardiac Output (SRT, F-32100)	Image Mode: 2D mode (SRT, G-03A2) Measurement Package Membership: 2D Gibson Package (99SIEMENSUS, MP2DGIB)
Gibson(2D): HR	Heart Rate (LN, 8867-4)	Image Mode: 2D mode (SRT, G-03A2) Measurement Package Membership: 2D Gibson Package (99SIEMENSUS, MP2DGIB)
Gibson(2D): IVSd	Interventricular Septum Diastolic Thickness (LN, 18154-5)	Image Mode: 2D mode (SRT, G-03A2) Measurement Package Membership: 2D Gibson Package (99SIEMENSUS, MP2DGIB)
Gibson(2D): IVSs	Interventricular Septum Systolic Thickness (LN, 18158-6)	Image Mode: 2D mode (SRT, G-03A2) Measurement Package Membership: 2D Gibson Package (99SIEMENSUS, MP2DGIB)
Gibson(2D): LVIDd	Left Ventricle Internal End Diastolic Dimension (LN, 29436-3)	Image Mode: 2D mode (SRT, G-03A2) Measurement Package Membership: 2D Gibson Package (99SIEMENSUS, MP2DGIB)
Gibson(2D): LVIDs	Left Ventricle Internal Systolic Dimension (LN, 29438-9)	Image Mode: 2D mode (SRT, G-03A2) Measurement Package Membership: 2D Gibson Package (99SIEMENSUS, MP2DGIB)
Gibson(2D): LVPWd	Left Ventricle Posterior Wall Diastolic Thickness (LN, 18152-9)	Image Mode: 2D mode (SRT, G-03A2) Measurement Package Membership: 2D Gibson Package (99SIEMENSUS, MP2DGIB)
Gibson(2D): LVPWs	Left Ventricle Posterior Wall Systolic Thickness (LN, 18156-0)	Image Mode: 2D mode (SRT, G-03A2) Measurement Package Membership: 2D Gibson Package (99SIEMENSUS, MP2DGIB)
Gibson(2D): EF	Left Ventricular Ejection Fraction (LN, 18043-0)	Image Mode: 2D mode (SRT, G-03A2) Measurement Package Membership: 2D Gibson Package (99SIEMENSUS, MP2DGIB)
Gibson(2D): EDV	Left Ventricular End Diastolic Volume (LN, 18026-5)	Image Mode: 2D mode (SRT, G-03A2) Measurement Package Membership: 2D Gibson Package (99SIEMENSUS, MP2DGIB)

Label	Code Meaning (Coding Scheme Designator, Code Value)	Modifiers
Gibson(2D): ESV	Left Ventricular End Systolic Volume (LN, 18148-7)	Image Mode: 2D mode (SRT, G-03A2) Measurement Package Membership: 2D Gibson Package (99SIEMENSUS, MP2DGIB)
Gibson(2D): FS	Left Ventricular Fractional Shortening (LN, 18051-3)	Image Mode: 2D mode (SRT, G-03A2) Measurement Package Membership: 2D Gibson Package (99SIEMENSUS, MP2DGIB)
Gibson(2D): SI	Stroke Index (SRT, F-00078)	Image Mode: 2D mode (SRT, G-03A2) Measurement Package Membership: 2D Gibson Package (99SIEMENSUS, MP2DGIB)
Gibson(2D): SV	Stroke Volume (SRT, F-32120)	Image Mode: 2D mode (SRT, G-03A2) Measurement Package Membership: 2D Gibson Package (99SIEMENSUS, MP2DGIB)
LV/Gibson(M): CI	Cardiac Index (SRT, F-32110)	Image Mode: M-Mode (SRT, G-0394) Measurement Package Membership: Mmode Gibson Package (99SIEMENSUS, MPMMode)
LV/ Gibson (M): CO	Cardiac Output (SRT, F-32100)	Image Mode: M-Mode (SRT, G-0394) Measurement Package Membership: Mmode Gibson Package (99SIEMENSUS, MPMMode)
LV/ Gibson (M): HR	Heart Rate (LN, 8867-4)	Image Mode: M-Mode (SRT, G-0394) Measurement Package Membership: Mmode Gibson Package (99SIEMENSUS, MPMMode)
LV/ Gibson (M): IVSd	Interventricular Septum Diastolic Thickness (LN, 18154-5)	Image Mode: M-Mode (SRT, G-0394) Measurement Package Membership: Mmode Gibson Package (99SIEMENSUS, MPMMode)
LV/ Gibson (M): IVSs	Interventricular Septum Systolic Thickness (LN, 18158-6)	Image Mode: M-Mode (SRT, G-0394) Measurement Package Membership: Mmode Gibson Package (99SIEMENSUS, MPMMode)
LV/ Gibson (M): LVIDd	Left Ventricle Internal End Diastolic Dimension (LN, 29436-3)	Image Mode: M-Mode (SRT, G-0394) Measurement Package Membership: Mmode Gibson Package (99SIEMENSUS, MPMMode)
LV/ Gibson (M): LVIDs	Left Ventricle Internal Systolic Dimension (LN, 29438-9)	Image Mode: M-Mode (SRT, G-0394) Measurement Package Membership: Mmode Gibson Package (99SIEMENSUS, MPMMode)
LV/ Gibson (M): LV Mass	Left Ventricle Mass (LN, 18087-7)	Image Mode: M-Mode (SRT, G-0394) Measurement Method : Left Ventricle Mass corrected by M-Mode (99SIEMENSUS, MethodMassASEcor) Measurement Package Membership: Mmode Gibson Package (99SIEMENSUS, MPMMode)

Label	Code Meaning (Coding Scheme Designator, Code Value)	Modifiers
LV/ Gibson (M): LV Mass-I	Left Ventricle Mass (LN, 18087-7)	Image Mode: M-Mode (SRT, G-0394) Index: Body Surface Area (LN, 8277-6) Measurement Package Membership: Mmode Gibson Package (99SIEMENSUS, MPMMode)
LV/ Gibson (M): LV Mass-c	Left Ventricle Mass corrected (99SIEMENSUS, CA_LV_MASSc)	Image Mode: M-Mode (SRT, G-0394) Measurement Method = Left Ventricle Mass corrected by M-Mode (99SIEMENSUS, MethodMassASEcor) Measurement Package Membership: Mmode Gibson Package (99SIEMENSUS, MPMMode)
LV/ Gibson (M): LVPWd	Left Ventricle Posterior Wall Diastolic Thickness (LN, 18152-9)	Image Mode: M-Mode (SRT, G-0394) Measurement Package Membership: Mmode Gibson Package (99SIEMENSUS, MPMMode)
LV/ Gibson (M): LVPWs	Left Ventricle Posterior Wall Systolic Thickness (LN, 18156-0)	Image Mode: M-Mode (SRT, G-0394) Measurement Package Membership: Mmode Gibson Package (99SIEMENSUS, MPMMode)
LV/ Gibson (M): EF	Left Ventricular Ejection Fraction (LN, 18043-0)	Image Mode: M-Mode (SRT, G-0394) Measurement Package Membership: Mmode Gibson Package (99SIEMENSUS, MPMMode)
LV/ Gibson (M): EDV	Left Ventricular End Diastolic Volume (LN, 18026-5)	Image Mode: M-Mode (SRT, G-0394) Measurement Package Membership: Mmode Gibson Package (99SIEMENSUS, MPMMode)
LV/ Gibson (M): ESV	Left Ventricular End Systolic Volume (LN, 18148-7)	Image Mode: M-Mode (SRT, G-0394) Measurement Package Membership: Mmode Gibson Package (99SIEMENSUS, MPMMode)
LV/ Gibson (M): FS	Left Ventricular Fractional Shortening (LN, 18051-3)	Image Mode: M-Mode (SRT, G-0394) Measurement Package Membership: Mmode Gibson Package (99SIEMENSUS, MPMMode)
LV/ Gibson (M): SI	Stroke Index (SRT, F-00078)	Image Mode: M-Mode (SRT, G-0394) Measurement Package Membership: Mmode Gibson Package (99SIEMENSUS, MPMMode)
LV/ Gibson (M): SV	Stroke Volume (SRT, F-32120)	Image Mode: M-Mode (SRT, G-0394) Measurement Package Membership: Mmode Gibson Package (99SIEMENSUS, MPMMode)
LV/ Gibson (M): mVcf	systolic index (99SIEMENSUS, CA_LF_VCF)	Image Mode: M-Mode (SRT, G-0394) Measurement Package Membership: Mmode Gibson Package (99SIEMENSUS, MPMMode)

Label	Code Meaning (Coding Scheme Designator, Code Value)	Modifiers
Mod.Simpson: CI	Cardiac Index (SRT, F-32110)	Image Mode: 2D mode (SRT, G-03A2) Measurement Package Membership: 2D Modified Simpson Package (99SIEMENSUS, MP2DModSimp)
Mod.Simpson: CO	Cardiac Output (SRT, F-32100)	Image Mode: 2D mode (SRT, G-03A2) Measurement Package Membership: 2D Modified Simpson Package (99SIEMENSUS, MP2DModSimp)
Mod.Simpson: HR	Heart Rate (LN, 8867-4)	Image Mode : 2D mode (SRT, G-03A2) Measurement Package Membership: 2D Modified Simpson Package (99SIEMENSUS, MP2DModSimp)
Mod.Simpson: LVLd apical	Left Ventricle diastolic major axis (LN, 18077-8)	Image Mode : 2D mode (SRT, G-03A2) Measurement Package Membership: 2D Modified Simpson Package (99SIEMENSUS, MP2DModSimp)
Mod.Simpson: LVLs apical	Left Ventricle systolic major axis (LN, 18076-0)	Image Mode : 2D mode (SRT, G-03A2) Measurement Package Membership: 2D Modified Simpson Package (99SIEMENSUS, MP2DModSimp)
Mod.Simpson: LVAd sxMV	Left Ventricular Diastolic Area (SRT, G-0375)	Image Mode : 2D mode (SRT, G-03A2) Image View : Parasternal Short Axis at the Mitral Valve Level (SRT, G-039A) Measurement Package Membership: 2D Modified Simpson Package (99SIEMENSUS, MP2DModSimp)
Mod.Simpson: LVAd sxPM	Left Ventricular Diastolic Area (SRT, G-0375)	Image Mode : 2D mode (SRT, G-03A2) Image View : Parasternal Short Axis at the Papillary Muscle Level (SRT, G-039B) Measurement Package Membership: 2D Modified Simpson Package (99SIEMENSUS, MP2DModSimp)
Mod.Simpson: EF	Left Ventricular Ejection Fraction (LN, 18043-0)	Image Mode : 2D mode (SRT, G-03A2) Measurement Package Membership: 2D Modified Simpson Package (99SIEMENSUS, MP2DModSimp)
Mod.Simpson: EDV	Left Ventricular End Diastolic Volume (LN, 18026-5)	Image Mode : 2D mode (SRT, G-03A2) Measurement Package Membership: 2D Modified Simpson Package (99SIEMENSUS, MP2DModSimp)
Mod.Simpson: ESV	Left Ventricular End Systolic Volume (LN, 18148-7)	Image Mode : 2D mode (SRT, G-03A2) Measurement Package Membership: 2D Modified Simpson Package (99SIEMENSUS, MP2DModSimp)

Label	Code Meaning (Coding Scheme Designator, Code Value)	Modifiers
Mod.Simpson: LVAs sxMV	Left Ventricular Systolic Area (SRT, G-0374)	Image Mode : 2D mode (SRT, G-03A2) Image View : Parasternal Short Axis at the Mitral Valve Level (SRT, G-039A) Measurement Package Membership: 2D Modified Simpson Package (99SIEMENSUS, MP2DModSimp)
Mod.Simpson: LVAs sxPM	Left Ventricular Systolic Area (SRT, G-0374)	Image Mode : 2D mode (SRT, G-03A2) Image View : Parasternal Short Axis at the Papillary Muscle Level (SRT, G-039B) Measurement Package Membership: 2D Modified Simpson Package (99SIEMENSUS, MP2DModSimp)
Mod.Simpson: SI	Stroke Index (SRT, F-00078)	Image Mode : 2D mode (SRT, G-03A2) Measurement Package Membership: 2D Modified Simpson Package (99SIEMENSUS, MP2DModSimp)
Mod.Simpson: SV	Stroke Volume (SRT, F-32120)	Image Mode : 2D mode (SRT, G-03A2) Measurement Package Membership: 2D Modified Simpson Package (99SIEMENSUS, MP2DModSimp)
Qp/Qs: COs	Cardiac Output (SRT, F-32100)	Finding Site: Left Ventricle Outflow Tract (SNM3, T-32650) Image Mode: Doppler Mode (99SIEMENSUS, DOPPLER) Measurement Method: Doppler Volume Flow (DCM, 125219) Measurement Package Membership: DP Qp/Qs (99SIEMENSUS, MPDPQp2Qs)
Qp/Qs: Systemic diam	Cardiovascular Orifice Diameter (SRT, G-038F)	Image Mode : 2D mode (SRT, G-03A2) Finding Site: Left Ventricle Outflow Tract (SNM3, T-32650) Measurement Package Membership: DP Qp/Qs (99SIEMENSUS, MPDPQp2Qs)
Qp/Qs: HR	Heart Rate (LN, 8867-4)	Measurement Package Membership: DP Qp/Qs (99SIEMENSUS, MPDPQp2Qs)
Qp/Qs: SVs	Stroke Volume (SRT, F-32120)	Finding Site: Left Ventricle Outflow Tract (SNM3, T-32650) Image Mode : Doppler Mode (99SIEMENSUS, DOPPLER) Measurement Method: Doppler Volume Flow (DCM, 125219) Measurement Package Membership: DP Qp/Qs (99SIEMENSUS, MPDPQp2Qs)
Qp/Qs: Systemic VTI	Velocity Time Integral (LN, 20354-7)	Finding Site: Left Ventricle Outflow Tract (SNM3, T-32650) Flow Direction: Antegrade Flow (SRT, R-42047) Measurement Package Membership: DP Qp/Qs (99SIEMENSUS, MPDPQp2Qs)

9.3.3 Right Ventricle

Label	Code Meaning (Coding Scheme Designator, Code Value)	Modifiers
Right Ventricle	Finding Site: Right Ventricle (SRT, T-32500)	
Pulmonary Valve: CI	Cardiac Index (SRT, F-32110)	Finding Site: Right Ventricle Outflow Tract (SNM3, T-32550) Measurement Method: Doppler Volume Flow (DCM, 125219)
Pulmonary Valve: CO	Cardiac Output (SRT, F-32100)	Finding Site: Right Ventricle Outflow Tract (SNM3, T-32550) Measurement Method: Doppler Volume Flow (DCM, 125219)
Qp/Qs: COp	Cardiac Output (SRT, F-32100)	Finding Site: Right Ventricle Outflow Tract (SNM3, T-32550) Image Mode: Doppler Mode (99SIEMENSUS, DOPPLER) Measurement Method: Doppler Volume Flow (DCM, 125219) Measurement Package Membership: DP Qp/Qs (99SIEMENSUS, MPDPQp2Qs)
Pulmonary Valve: PV diam	Cardiovascular Orifice Diameter (SRT, G-038F)	Finding Site: Right Ventricle Outflow Tract (SNM3, T-32550) Image Mode: 2D mode (SRT, G-03A2)
Qp/Qs: Pulmonic diam	Cardiovascular Orifice Diameter (SRT, G-038F)	Finding Site: Right Ventricle Outflow Tract (SNM3, T-32550) Image Mode: 2D mode (SRT, G-03A2) Measurement Package Membership: DP Qp/Qs (99SIEMENSUS, MPDPQp2Qs)
Cubed(2D): RVAWd	Right Ventricle Anterior Wall Diastolic Thickness (LN, 18153-7)	Image Mode: 2D mode (SRT, G-03A2) Measurement Method: Cube Method (DCM, 125206)
Teichholz(2D): RVAWd	Right Ventricle Anterior Wall Diastolic Thickness (LN, 18153-7)	Image Mode: 2D mode (SRT, G-03A2) Measurement Method: Teichholz (DCM, 125209)
Gibson(2D): RVAWd	Right Ventricular Anterior Wall Diastolic Thickness (LN, 18153-7)	Image Mode: 2D mode (SRT, G-03A2) Measurement Package Membership : 2D Gibson Package (99SIEMENSUS, MP2DGIB)
Tricuspid Valve: RVIMP Tei Index: RVIMP	Right Ventricular Index of Myocardial Performance (SRT, G-0381)	
RV: RV diam	Right Ventricular Internal Diastolic Dimension (LN, 20304-2)	
Cubed(2D): RVDd	Right Ventricular Internal Diastolic Dimension (LN, 20304-2)	Image Mode: 2D mode (SRT, G-03A2) Measurement Method: Cube Method (DCM, 125206)

Label	Code Meaning (Coding Scheme Designator, Code Value)	Modifiers
Gibson(2D): RVDd	Right Ventricular Internal Diastolic Dimension (LN, 20304-2)	Image Mode: 2D mode (SRT, G-03A2) Measurement Package Membership : 2D Gibson Package (99SIEMENSUS, MP2DGIB)
Teichholz(2D): RVDd	Right Ventricular Internal Diastolic Dimension (LN, 20304-2)	Image Mode: 2D mode (SRT, G-03A2) Measurement Method: Teichholz (DCM, 125209)
LV/Cubed(M): RVDd	Right Ventricular Internal Diastolic Dimension (LN, 20304-2)	Image Mode: M-Mode (SRT, G-0394) Measurement Method: Cube Method (DCM, 125206)
LV/Gibson(M): RVDd	Right Ventricular Internal Diastolic Dimension (LN, 20304-2)	Image Mode: M-Mode (SRT, G-0394) Measurement Package Membership : MMode Gibson Package (99SIEMENSUS, MPMMode)
LV/Teich(M): RVDd	Right Ventricular Internal Diastolic Dimension (LN, 20304-2)	Image Mode: M-Mode (SRT, G-0394) Measurement Method: Teichholz (DCM, 125209)
AV/LA: RV diam	Right Ventricular Internal Diastolic Dimension at AV/LA (99SIEMENSUS, CA_RV_INTD_AVLA)	
AV/LA(M): RV diam	Right Ventricular Internal Diastolic Dimension at AV/LA (99SIEMENSUS, CA_RV_INTD_AVLA)	Image Mode: M-Mode (SRT, G-0394)
TR: RVSP	Right Ventricular Peak Systolic Pressure (SRT, G-0380)	
Pulmonary Valve: SI	Stroke Index (SRT, F-00078)	Finding Site: Right Ventricle Outflow Tract (SNM3, T-32550) Measurement Method: Doppler Volume Flow (DCM, 125219)
Pulmonary Valve: SV	Stroke Volume (SRT, F-32120)	Finding Site: Right Ventricle Outflow Tract (SNM3, T-32550) Measurement Method: Doppler Volume Flow (DCM, 125219)
Qp/Qs: SVp	Stroke Volume (SRT, F-32120)	Finding Site: Right Ventricle Outflow Tract (SNM3, T-32550) Measurement Method: Doppler Volume Flow (DCM, 125219) Image Mode: Doppler Mode (99SIEMENSUS, DOPPLER) Measurement Package Membership: DP Qp/Qs (99SIEMENSUS, MPDPQp2Qs)
Qp/Qs: Pulmonic VTI	Velocity Time Integral (LN, 20354-7)	Finding Site: Right Ventricle Outflow Tract (SNM3, T-32550) Flow Direction: Antegrade Flow (SRT, R-42047) Measurement Package Membership: DP Qp/Qs (99SIEMENSUS, MPDPQp2Qs)

9.3.4 Left Atrium

Label	Code Meaning (Coding Scheme Designator, Code Value)	Modifiers
Left Atrium	Finding Site: Left Atrium (SRT, T-32300)	
AV/LA: AOd/LAs	Aortic Root Diameter (Dia) to Left Atrium Diameter (Sys) Ratio (99SIEMENSUS, CA_LA_AOd2LAs)	
AV/LA(M): AOd/LAs	Aortic Root Diameter (Dia) to Left Atrium Diameter (Sys) Ratio (99SIEMENSUS, CA_LA_AOd2LAs)	Image Mode: M-Mode (SRT, G-0394)
AV/LA: LAd diam	Diameter (SRT, M-02550)	Cardiac Cycle Point: Diastole (SRT, F-32010)
AV/LA(M): LAd diam	Diameter (SRT, M-02550)	Cardiac Cycle Point: Diastole (SRT, F-32010) Image Mode: M-Mode (SRT, G-0394)
AV/LA: LAs diam	Diameter (SRT, M-02550)	Cardiac Cycle Point: Systole (SRT, F-32020)
AV/LA(M): LAs diam	Diameter (SRT, M-02550)	Cardiac Cycle Point: Systole (SRT, F-32020) Image Mode: M-Mode (SRT, G-0394)
LA Vol (A-L): LA Vol (A-L)	Left Atrial ES Volume (DCM, 122408)	Image Mode: 2D mode (SRT, G-03A2) Measurement Method: Area-Length Biplane (DCM, 125204)
LA Vol (A-L): LA Vol-I	Left Atrial ES Volume (DCM, 122408)	Image Mode: 2D mode (SRT, G-03A2) Index: Body Surface Area (LN, 8277-6) Measurement Method: Area-Length Biplane (DCM, 125204)
LA Vol (Simp): LA Vol-I	Left Atrial ES Volume (DCM, 122408)	Image Mode: 2D mode (SRT, G-03A2) Index: Body Surface Area (LN, 8277-6) Measurement Method: Method of Disks, Biplane (DCM, 125207)
LA Vol (Simp): 4CH	Left Atrial ES Volume (DCM, 122408)	Image View: Apical Four Chamber (SRT, G-A19C) Measurement Method: Method of Disks, Single Plane (DCM, 125208)
LA Vol (Simp): 2CH	Left Atrial ES Volume (DCM, 122408)	Image View: Apical Two Chamber (SRT, G-A19B) Measurement Method: Method of Disks, Single Plane (DCM, 125208)
LA Vol (Simp): LA Vol(Simp)	Left Atrial ES Volume (DCM, 122408)	Measurement Method: Method of Disks, Biplane (DCM, 125207)
LA Vol (A-L): A1-A4C	Left Atriuim Systolic Area (LN, 17977-0)	Image Mode: 2D mode (SRT, G-03A2) Image View: Apical Four Chamber (SRT, G-A19C) Cardiac Cycle Point: Systole (SRT, F-32020)
LA Vol (A-L): A2-A2C	Left Atriuim Systolic Area (LN, 17977-0)	Image Mode: 2D mode (SRT, G-03A2) Image View: Apical Two Chamber (SRT, G-A19B) Cardiac Cycle Point: Systole (SRT, F-32020)

Label	Code Meaning (Coding Scheme Designator, Code Value)	Modifiers
LA Vol (A-L): L	Left Atrium Antero-posterior Systolic Dimension (LN, 29469-4)	Image Mode: 2D mode (SRT, G-03A2) Cardiac Cycle Point: Systole (SRT, F-32020)
AV/LA: LAs/AOd	Left Atrium Diameter (Sys) to Aortic Root Diameter (Dia) Ratio (99SIEMENSUS, CA_LA_LAs2AOd)	
AV/LA(M): LAs/AOd	Left Atrium Diameter (Sys) to Aortic Root Diameter (Dia) Ratio (99SIEMENSUS, CA_LA_LAs2AOd)	Image Mode: M-Mode (SRT, G-0394)
Auto Left Heart: LA EDV2	Left Atrial ED Volume (DCM, 122407)	Image Mode: 2D mode (SRT, G-03A2) Image View: Apical Two Chamber (SRT, G-A19B) Measurement Method: Method of Disks, Biplane (DCM, 125207) Measurement Package Membership: 2D Auto Left Heart Package (99SIEMENSUS, MPAutoLeftHeart)
Auto Left Heart: LA EDV4	Left Atrial ED Volume (DCM, 122407)	Image Mode: 2D mode (SRT, G-03A2) Image View: Apical Four Chamber (SRT, G-A19C) Measurement Method: Method of Disks, Biplane (DCM, 125207) Measurement Package Membership: 2D Auto Left Heart Package (99SIEMENSUS, MPAutoLeftHeart)
Auto Left Heart: LA ESV2	Left Atrial ES Volume (DCM, 122408)	Image Mode: 2D mode (SRT, G-03A2) Image View: Apical Two Chamber (SRT, G-A19B) Measurement Method: Method of Disks, Biplane (DCM, 125207) Measurement Package Membership: 2D Auto Left Heart Package (99SIEMENSUS, MPAutoLeftHeart)
Auto Left Heart: LA ESV4	Left Atrial ES Volume (DCM, 122408)	Image Mode: 2D mode (SRT, G-03A2) Image View: Apical Four Chamber (SRT, G-A19C) Measurement Method: Method of Disks, Biplane (DCM, 125207) Measurement Package Membership: 2D Auto Left Heart Package (99SIEMENSUS, MPAutoLeftHeart)
Auto Left Heart: LA EF2	Left Atrium Ejection Fraction (99SIEMENSUS, CA_LA_EF)	Image Mode: 2D mode (SRT, G-03A2) Image View: Apical Two Chamber (SRT, G-A19B) Measurement Method: Method of Disks, Biplane (DCM, 125207) Measurement Package Membership: 2D Auto Left Heart Package (99SIEMENSUS, MPAutoLeftHeart)

Label	Code Meaning (Coding Scheme Designator, Code Value)	Modifiers
Auto Left Heart: LA EF4	Left Atrium Ejection Fraction (99SIEMENSUS, CA_LA_EF)	Image Mode: 2D mode (SRT, G-03A2) Image View: Apical Four Chamber (SRT, G-A19C) Measurement Method: Method of Disks, Biplane (DCM, 125207) Measurement Package Membership: 2D Auto Left Heart Package (99SIEMENSUS, MPAutoLeftHeart)

9.3.5 Right Atrium

Label	Code Meaning (Coding Scheme Designator, Code Value)	Modifiers
Right Atrium	Finding Site: Right Atrium (SRT, T-32200)	
RA Vol(A-L): A1-A4C	Right Atrium Systolic Area (LN, 17988-7)	Image Mode: 2D mode (SRT, G-03A2) Image View: Apical Four Chamber (SRT, G-A19C) Cardiac Cycle Point: Systole (SRT, F-32020)
RA Vol(A-L): A2-A2C	Right Atrium Systolic Area (LN, 17988-7)	Image Mode: 2D mode (SRT, G-03A2) Image View: Apical Two Chamber (SRT, G-A19B) Cardiac Cycle Point: Systole (SRT, F-32020)
RA Vol(A-L): L	Right Atrium Systolic Dimension (99SIEMENSUS, CA_RA_DIA)	Image Mode: 2D mode (SRT, G-03A2) Cardiac Cycle Point: Systole (SRT, F-32020)
PR: RAP TR: RAP or not shown on report	Right Atrium Systolic Pressure (LN, 18070-3)	
RA Vol(A-L): RA Vol(A-L)	Right Atrium Systolic Volume (99SIEMENSUS, CA_RA_VOL)	Image Mode: 2D mode (SRT, G-03A2) Cardiac Cycle Point: Systole (SRT, F-32020) Measurement Method = Area-Length Biplane (DCM, 125204)
RA Vol(A-L): RA Vol-I	Right Atrium Systolic Volume (99SIEMENSUS, CA_RA_VOL)	Image Mode: 2D mode (SRT, G-03A2) Index: Body Surface Area (LN, 8277-6) Measurement Method = Area-Length Biplane (DCM, 125204)
RA Vol(Simp): 2CH	Right Atrium Systolic Volume (99SIEMENSUS, CA_RA_VOL)	Image Mode: 2D mode (SRT, G-03A2) Image View: Apical Two Chamber (SRT, G-A19B) Cardiac Cycle Point: Systole (SRT, F-32020)
RA Vol(Simp): 4CH	Right Atrium Systolic Volume (99SIEMENSUS, CA_RA_VOL)	Image Mode: 2D mode (SRT, G-03A2) Image View: Apical Four Chamber (SRT, G-A19C) Cardiac Cycle Point: Systole (SRT, F-32020)

Label	Code Meaning (Coding Scheme Designator, Code Value)	Modifiers
RA Vol(Simp): RA Vol (Simp)	Right Atrium Systolic Volume (99SIEMENSUS, CA_RA_VOL)	Image Mode: 2D mode (SRT, G-03A2) Cardiac Cycle Point: Systole (SRT, F-32020) Measurement Method: Method of Disks, Biplane (DCM, 125207)
RA Vol(Simp): RA Vol-I	Right Atrium Systolic Volume (99SIEMENSUS, CA_RA_VOL)	Image Mode: 2D mode (SRT, G-03A2) Index: Body Surface Area (LN, 8277-6) Measurement Method: Method of Disks, Biplane (DCM, 125207)

9.3.6 Aortic Valve

Label	Code Meaning (Coding Scheme Designator, Code Value)	Modifiers
Aortic Valve	Finding Site: Aortic Valve (SRT, T-35400)	
AR: AR Duration	Aortic Regurgitation Duration (99SIEMENSUS, CA_AR_DUR)	
AV/LA: ACS	Aortic Valve Cusp Separation (LN, 17996-0)	Image Mode: 2D mode (SRT, G-03A2)
AV/LA(M): ACS	Aortic Valve Cusp Separation (LN, 17996-0)	Image Mode: M-Mode (SRT, G-0394)
Aortic Valve: LVET	Aortic Valve Ejection Time (LN, 18041-4)	Image Mode: Doppler Mode (99SIEMENSUS, DOPPLER)
AV/LA: LVET AV/LA(M): LVET	Aortic Valve Ejection Time (LN, 18041-4)	Image Mode: M-Mode (SRT, G-0394)
LV/Teich(M): LVET	Aortic Valve Ejection Time (LN, 18041-4)	Image Mode: M-Mode (SRT, G-0394) Measurement Method: Teichholz (DCM, 125209)
LV/Gibson(M): LVET	Aortic Valve Ejection Time (LN, 18041-4)	Image Mode: M-Mode (SRT, G-0394) Measurement Package Membership : MMode Gibson Package (99SIEMENSUS, MPMMode)
LV/Cubed(M): LVET	Aortic Valve Ejection Time (LN, 18041-4)	Image Mode: M-Mode (SRT, G-0394) Measurement Method: Cube Method (DCM, 125206)
Aortic Valve: LVSTI	Aortic Valve Pre-ejection Period to Ejection Time (99SIEMENSUS, CA_AV_PEP2ET)	Image Mode: Doppler Mode (99SIEMENSUS, DOPPLER)
AV/LA: LVSTI AV/LA(M): LVSTI	Aortic Valve Pre-ejection Period to Ejection Time (99SIEMENSUS, CA_AV_PEP2ET)	Image Mode: M-Mode (SRT, G-0394)
Aortic Valve: AVA(Vmax)	Cardiovascular Orifice Area (SRT, G-038E)	Flow Direction: Antegrade Flow (SRT, R-42047) Measurement Method: Continuity Equation by Peak Velocity (DCM, 125214);

Label	Code Meaning (Coding Scheme Designator, Code Value)	Modifiers
Aortic Valve: AVA(VTI)	Cardiovascular Orifice Area (SRT, G-038E)	Flow Direction: Antegrade Flow (SRT, R-42047) Measurement Method: Continuity Equation by Velocity Time Integral (DCM, 125215)
Aortic Valve: AVA(Trace)	Cardiovascular Orifice Area (SRT, G-038E)	Image Mode: 2D mode (SRT, G-03A2) Measurement Method: Planimetry (DCM, 125220)
AR: Decel Rate	Deceleration Slope (LN, 20216-8)	Flow Direction: Regurgitant Flow (SRT, R-42E61)
AR: AI Dec Slope	Deceleration Slope (LN, 20216-8)	Flow Direction: Regurgitant Flow (SRT, R-42E61) Measurement Method: Area by Pressure Half-Time (DCM, 125210)
AR: AR DT	Deceleration Time (LN, 20217-6)	Flow Direction: Regurgitant Flow (SRT, R-42E61)
AR: AI Dec Time	Deceleration Time (LN, 20217-6)	Flow Direction: Regurgitant Flow (SRT, R-42E61) Measurement Method: Area by Pressure Half-Time (DCM, 125210)
AR: AR V ed	End Diastolic Velocity (LN, 11653-3)	Flow Direction: Regurgitant Flow (SRT, R-42E61)
Aortic Valve: HR	Heart Rate (LN, 8867-4)	Finding Site: Aortic Valve (SRT, T-35400)
Aortic Valve: LVOT/AV VTI	Left Ventricle Outflow Tract VTI to Aortic Valve VTI Ratio (99SIEMENSUS, CA_LVOT2AV_VTI)	Image Mode: Doppler Mode (99SIEMENSUS, DOPPLER)
AR: AR Vmax	Maximum Velocity (LN, 20351-3)	Flow Direction: Regurgitant Flow (SRT, R-42E61)
AR: AI Vmax	Maximum Velocity (LN, 20351-3)	Flow Direction: Regurgitant Flow (SRT, R-42E61) Measurement Method: Area by Pressure Half-Time (DCM, 125210)
Aortic Valve: AV PGmean	Mean Gradient (LN, 20256-4)	Flow Direction: Antegrade Flow (SRT, R-42047)
Aortic Valve: AV Vmean	Mean Velocity (LN, 20352-1)	Flow Direction: Antegrade Flow (SRT, R-42047)
Aortic Valve: AV PGmax	Peak Gradient (LN, 20247-3)	Flow Direction: Antegrade Flow (SRT, R-42047)
AR: AR PGmax	Peak Gradient (LN, 20247-3)	Flow Direction: Regurgitant Flow (SRT, R-42E61)
AR: AI PGmax	Peak Gradient (LN, 20247-3)	Flow Direction: Regurgitant Flow (SRT, R-42E61) Measurement Method: Area by Pressure Half-Time (DCM, 125210)
Aortic Valve: AV Vmax	Peak Systolic Velocity (LN, 11726-7)	Flow Direction: Antegrade Flow (SRT, R-42047)
Aortic Valve: LVPEP	Pre-Ejection Period (LN, 18068-7)	
AV/LA: LVPEP AV/LA(M): LVPEP	Pre-Ejection Period (LN, 18068-7)	Image Mode: M-Mode (SRT, G-0394)
AR: AI PHT	Pressure Half-Time (LN, 20280-4)	Flow Direction: Regurgitant Flow (SRT, R-42E61) Measurement Method: Area by Pressure Half-Time (DCM, 125210)
Aortic Valve: AV VTI	Velocity Time Integral (LN, 20354-7)	Flow Direction: Antegrade Flow (SRT, R-42047)

9.3.7 Mitral Valve

Label	Code Meaning (Coding Scheme Designator, Code Value)	Modifiers
Mitral Valve	Finding Site: Mitral Valve (SRT, T-35300)	
Mitral Valve(M): CA amp	Amplitude A Wave Mmode (99SIEMENSUS, CA_MV_AWaveAmpl)	Image Mode: M-Mode (SRT, G-0394)
Mitral Valve(M): DE amp	Amplitude D-E Wave Mmode (99SIEMENSUS, CA_MV_DEWaveAmpl)	Image Mode: M-Mode (SRT, G-0394)
Mitral Valve(M): CE amp	Amplitude E Wave Mmode (99SIEMENSUS, CA_MV_EWaveAmpl)	Image Mode: M-Mode (SRT, G-0394)
PISA(MS): Angle	Angle measured at Mitral Valve Stenosis (99SIEMENSUS, CA_MS_Angle)	Flow Direction: Antegrade Flow (SRT, R-42047) Measurement Method: Proximal Isovelocity Surface Area (DCM, 125216)
Mitral Valve: LVET Tei Index: LVET	Aortic Valve Ejection Time (LN, 18041-4)	Image Mode: Doppler Mode (99SIEMENSUS, DOPPLER)
Mitral Valve: CI	Cardiac Index (SRT, F-32110)	Image Mode: Doppler Mode (99SIEMENSUS, DOPPLER) Measurement Method: Doppler Volume Flow (DCM, 125219)
Mitral Valve: MVA(Trace)	Cardiovascular Orifice Area (SRT, G-038E)	Image Mode: 2D mode (SRT, G-03A2) Measurement Method: Planimetry (DCM, 125220);
Mitral Valve: MVA(PHT)	Cardiovascular Orifice Area (SRT, G-038E)	Image Mode: Doppler Mode (99SIEMENSUS, DOPPLER) Flow Direction: Antegrade Flow (SRT, R-42047) Measurement Method: Area by Pressure Half-Time (DCM, 125210)
Mitral Valve: MVA(VTI)	Cardiovascular Orifice Area (SRT, G-038E)	Image Mode: Doppler Mode (99SIEMENSUS, DOPPLER) Flow Direction: Antegrade Flow (SRT, R-42047) Measurement Method: Continuity Equation (DCM, 125212)
PISA(MR): EO Area	Cardiovascular Orifice Area (SRT, G-038E)	Image Mode: Doppler Mode (99SIEMENSUS, DOPPLER) Flow Direction: Regurgitant Flow (SRT, R-42E61) Measurement Method: Proximal Isovelocity Surface Area (DCM, 125216)
PISA(MS): MVA	Cardiovascular Orifice Area (SRT, G-038E)	Image Mode: Doppler Mode (99SIEMENSUS, DOPPLER) Flow Direction: Antegrade Flow (SRT, R-42047) Measurement Method: Proximal Isovelocity Surface Area (DCM, 125216)

Label	Code Meaning (Coding Scheme Designator, Code Value)	Modifiers
Mitral Valve: MV diam	Cardiovascular Orifice Diameter (SRT, G-038F)	
Mitral Valve: Dec Slope	Deceleration Slope (LN, 20216-8)	Image Mode: Doppler Mode (99SIEMENSUS, DOPPLER)
Mitral Valve: MV DT	Deceleration Time (LN, 20217-6)	Image Mode: Doppler Mode (99SIEMENSUS, DOPPLER)
MR: dt	Deceleration Time (LN, 20217-6)	Flow Direction: Regurgitant Flow (SRT, R-42E61)
PISA(MS): Radius	Dome Radius (99SIEMENSUS, CA_DOME)	Flow Direction: Antegrade Flow (SRT, R-42047) Measurement Method: Proximal Isovelocity Surface Area (DCM, 125216)
PISA(MR): Radius	Dome Radius (99SIEMENSUS, CA_DOME)	Flow Direction: Regurgitant Flow (SRT, R-42E61) Measurement Method: Proximal Isovelocity Surface Area (DCM, 125216)
Mitral Valve: HR	Heart Rate (LN, 8867-4)	
Mitral Valve: MV Vmax	Maximum Velocity (LN, 20351-3)	Flow Direction: Antegrade Flow (SRT, R-42047)
PISA(MS): MS Vmax	Maximum Velocity (LN, 20351-3)	Flow Direction: Antegrade Flow (SRT, R-42047) Measurement Method: Proximal Isovelocity Surface Area (DCM, 125216)
Mitral Valve: MV PGmean	Mean Gradient (LN, 20256-4)	Flow Direction: Antegrade Flow (SRT, R-42047)
Mitral Valve: MV Vmean	Mean Velocity (LN, 20352-1)	Flow Direction: Antegrade Flow (SRT, R-42047)
PISA(MS): Aliasing Vel	Mean Velocity (LN, 20252-1)	Flow Direction: Antegrade Flow (SRT, R-42047) Measurement Method: Proximal Isovelocity Surface Area (DCM, 125216) Derivation: Estimated (DCM, 121427)
PISA(MR): Aliasing Vel	Mean Velocity (LN, 20252-1)	Flow Direction: Regurgitant Flow (SRT, R-42E61) Measurement Method: Proximal Isovelocity Surface Area (DCM, 125216) Derivation: Estimated (DCM, 121427)
MR: dP/dt	Mitral Regurg. dP/dt derived from Mitral Regurg. velocity (LN, 18035-6)	
Mitral Valve(M): CA/CE	Mitral Valve A to E Ratio (99SIEMENSUS, CA_MV_A2E)	Image Mode: M-Mode (SRT, G-0394)
Mitral Valve: A/E	Mitral Valve A to E Ratio (99SIEMENSUS, CA_MV_A2E)	
Mitral Valve: A Dur	Mitral Valve A-Wave Duration (SRT, G-0385)	
Mitral Valve: MV A pt	Mitral Valve A-Wave Peak Velocity (LN, 17978-8)	
Mitral Valve: MV C-O dur Tei Index: MV C-O dur	Mitral Valve Closure to Opening Time (SRT, G-0387)	
Mitral Valve(M): DE excursion	Mitral Valve D-E Excursion (LN, 17997-8)	Image Mode: M-Mode (SRT, G-0394)

Label	Code Meaning (Coding Scheme Designator, Code Value)	Modifiers
Mitral Valve: MV PGmax	Mitral Valve Diastolic Peak Instantaneous Gradient (LN, 18057-0)	
Mitral Valve: E/A	Mitral Valve E to A Ratio (LN, 18038-0)	Image Mode: Doppler Mode (99SIEMENSUS, DOPPLER)
Mitral Valve(M): EF Slope	Mitral Valve E-F Slope by M-Mode (LN, 18040-6)	Image Mode: M-Mode (SRT, G-0394)
Mitral Valve: EPSS	Mitral Valve EPSS, E wave (LN, 18036-4)	Image Mode: 2D mode (SRT, G-03A2)
Mitral Valve(M): EPSS	Mitral Valve EPSS, E wave (LN, 18036-4)	Image Mode: M-Mode (SRT, G-0394)
Mitral Valve: Dec Time	Mitral Valve E-Wave Deceleration Time (SRT, G-0384)	
Mitral Valve: E Dur	Mitral Valve E-Wave Duration (99SIEMENSUS, CA_MV_DURe)	
Mitral Valve: MV E pt	Mitral Valve E-Wave Peak Velocity (LN, 18037-2)	
PISA(MS): MS PGmax	Peak Gradient (LN, 20247-3)	Flow Direction: Antegrade Flow (SRT, R-42047) Measurement Method: Proximal Isovelocity Surface Area (DCM, 125216)
MR: MR PGmax	Peak Gradient (LN, 20247-3)	Flow Direction: Regurgitant Flow (SRT, R-42E61)
PISA(MS): Flow Rate	Peak Instantaneous Flow Rate (LN, 34141-2)	Flow Direction: Antegrade Flow (SRT, R-42047) Measurement Method: Proximal Isovelocity Surface Area (DCM, 125216)
PISA(MR): Flow Rate	Peak Instantaneous Flow Rate (LN, 34141-2)	Flow Direction: Regurgitant Flow (SRT, R-42E61) Measurement Method: Proximal Isovelocity Surface Area (DCM, 125216)
MR: MR Vmax	Peak Systolic Velocity (LN, 11726-7)	Flow Direction: Regurgitant Flow (SRT, R-42E61)
PISA(MR): MR Vmax	Peak Systolic Velocity (LN, 11726-7)	Flow Direction: Regurgitant Flow (SRT, R-42E61) Measurement Method: Proximal Isovelocity Surface Area (DCM, 125216)
Mitral Valve: MV PHT	Pressure Half-Time (LN, 20280-4)	Flow Direction: Antegrade Flow (SRT, R-42047)
Mitral Valve: SI	Stroke Index (SRT, F-00078)	Image Mode: Doppler Mode (99SIEMENSUS, DOPPLER)
Mitral Valve: MV VTI	Velocity Time Integral (LN, 20354-7)	Flow Direction: Antegrade Flow (SRT, R-42047)
PISA(MS): MS VTI	Velocity Time Integral (LN, 20354-7)	Flow Direction: Antegrade Flow (SRT, R-42047) Measurement Method: Proximal Isovelocity Surface Area (DCM, 125216)
PISA(MR): MR VTI	Velocity Time Integral (LN, 20354-7)	Flow Direction: Regurgitant Flow (SRT, R-42E61) Measurement Method: Proximal Isovelocity Surface Area (DCM, 125216)
PISA(MS): Flow Vol	Volume Flow (LN, 33878-0)	Flow Direction: Antegrade Flow (SRT, R-42047) Measurement Method: Proximal Isovelocity Surface Area (DCM, 125216)

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Label	Code Meaning (Coding Scheme Designator, Code Value)	Modifiers
PISA(MR): Flow Vol	Volume Flow (LN, 33878-0)	Flow Direction: Regurgitant Flow (SRT, R-42E61) Measurement Method: Proximal Isovelocity Surface Area (DCM, 125216)
MVA: Annulus Area(2D)	Annulus 2D area (99SIEMENSUS, CA_AREA_ANN)	Measurement Package Membership: 3D Mitral Valve Analysis Package (99SIEMENSUS, MP3DMVA)
MVA: Annulus Circum.	Annulus 3D circumference (99SIEMENSUS, CA_LENGTH_ANN)	Measurement Package Membership: 3D Mitral Valve Analysis Package (99SIEMENSUS, MP3DMVA)
MVA: Anterior Annulus	Anterior annulus 3D length (99SIEMENSUS, CA_LENGTH_AA)	Measurement Package Membership: 3D Mitral Valve Analysis Package (99SIEMENSUS, MP3DMVA)
MVA: AL-PM Diameter	Anterior-lateral Posterior-medial 3D diameter (99SIEMENSUS, CA_DIA_ALAP)	Measurement Package Membership: 3D Mitral Valve Analysis Package (99SIEMENSUS, MP3DMVA)
MVA: AP Diameter	Anterior-Posterior 3D diameter (99SIEMENSUS, CA_DIA_AP)	Measurement Package Membership: 3D Mitral Valve Analysis Package (99SIEMENSUS, MP3DMVA)
MVA: CL Length(2D)	Closure line 2D length (99SIEMENSUS, CA_LENGTH_CL_2D)	Measurement Package Membership: 3D Mitral Valve Analysis Package (99SIEMENSUS, MP3DMVA)
MVA: CL Length	Closure line 3D length (99SIEMENSUS, CA_LENGTH_CL_3D)	Measurement Package Membership: 3D Mitral Valve Analysis Package (99SIEMENSUS, MP3DMVA)
MVA: Commissural Diam.	Commissural 3D diameter (99SIEMENSUS, CA_DIA_CC)	Measurement Package Membership: 3D Mitral Valve Analysis Package (99SIEMENSUS, MP3DMVA)
MVA: Non-planar Angle	NPA Non-planar angle (99SIEMENSUS, CA_NPA)	Measurement Package Membership: 3D Mitral Valve Analysis Package (99SIEMENSUS, MP3DMVA)
MVA: Posterior Annulus	Posterior annulus 3D length (99SIEMENSUS, CA_LENGTH_PA)	Measurement Package Membership: 3D Mitral Valve Analysis Package (99SIEMENSUS, MP3DMVA)
MVA: Sphericity Index	Sphericity Index 3D (99SIEMENSUS, CA_SPHER_IND)	Measurement Package Membership: 3D Mitral Valve Analysis Package (99SIEMENSUS, MP3DMVA)

9.3.8 Pulmonary Valve

Label	Code Meaning (Coding Scheme Designator, Code Value)	Modifiers
Pulmonary Valve	Finding Site: Pulmonary Valve (SRT, T-35200)	
Pulmonary Valve: RV Act	Acceleration Time (LN, 20168-1)	Flow Direction: Antegrade Flow (SRT, R-42047)
PR: PR Ved	End Diastolic Velocity (LN, 11653-3)	Flow Direction: Regurgitant Flow (SRT, R-42E61)
Pulmonary Valve: HR	Heart Rate (LN, 8867-4)	
PR: PR Vmax	Maximum Velocity (LN, 20351-3)	Flow Direction: Regurgitant Flow (SRT, R-42E61)
Pulmonary Valve: PV PGmean	Mean Gradient (LN, 20256-4)	Flow Direction: Antegrade Flow (SRT, R-42047)
PR: PR PGmean	Mean Gradient (LN, 20256-4)	Flow Direction: Regurgitant Flow (SRT, R-42E61)

Label	Code Meaning (Coding Scheme Designator, Code Value)	Modifiers
Pulmonary Valve: PV Vmean	Mean Velocity (LN, 20352-1)	Flow Direction: Antegrade Flow (SRT, R-42047)
PR: PR Vmean	Mean Velocity (LN, 20352-1)	Flow Direction: Regurgitant Flow (SRT, R-42E61)
Pulmonary Valve: PV PGmax	Peak Gradient (LN, 20247-3)	Flow Direction: Antegrade Flow (SRT, R-42047)
PR: PR PGmax	Peak Gradient (LN, 20247-3)	Flow Direction: Regurgitant Flow (SRT, R-42E61)
Pulmonary Valve: PV Vmax	Peak Systolic Velocity (LN, 11726-7)	Flow Direction: Antegrade Flow (SRT, R-42047)
Pulmonary Valve: RVET Tricuspid Valve: RVET Tei Index: RVET	Pulmonic Valve Ejection Time (LN, 18042-2)	
Pulmonary Valve: RVSTI	Pulmonic Valve Pre-ejection Period to Ejection Time (99SIEMENSUS, CA_PV_PEP2ET)	Image Mode: Doppler Mode (99SIEMENSUS, DOPPLER)
Pulmonary Valve: RV Acc T/ET	Ratio of Pulmonic Valve Acceleration Time to Ejection Time (SRT, G-0388)	Flow Direction: Antegrade Flow (SRT, R-42047)
Pulmonary Valve: RV PEP	Right Ventricle Pre-Ejection Period (LN, 20301-8)	Image Mode: M-Mode (SRT, G-0394)
Pulmonary Valve: PV VTI	Velocity Time Integral (LN, 20354-7)	Flow Direction: Antegrade Flow (SRT, R-42047)
PR: PR VTI	Velocity Time Integral (LN, 20354-7)	Flow Direction: Regurgitant Flow (SRT, R-42E61)

9.3.9 Tricuspid Valve

Label	Code Meaning (Coding Scheme Designator, Code Value)	Modifiers
Tricuspid Valve	Finding Site: Tricuspid Valve (SRT, T-35100)	
Tricuspid Valve: TV Vmax	Maximum Velocity (LN, 20351-3)	Flow Direction: Antegrade Flow (SRT, R-42047)
Tricuspid Valve: TV PGmean	Mean Gradient (LN, 20256-4)	Flow Direction: Antegrade Flow (SRT, R-42047)
TR: TR PGmean	Mean Gradient (LN, 20256-4)	Flow Direction: Regurgitant Flow (SRT, R-42E61)
Tricuspid Valve: TV Vmean	Mean Velocity (LN, 20352-1)	Flow Direction: Antegrade Flow (SRT, R-42047)
TR: TR Vmean	Mean Velocity (LN, 20352-1)	Flow Direction: Regurgitant Flow (SRT, R-42E61)
Tricuspid Valve: TV PGmax	Peak Gradient (LN, 20247-3)	Flow Direction: Antegrade Flow (SRT, R-42047)
TR: TR PGmax	Peak Gradient (LN, 20247-3)	Flow Direction: Regurgitant Flow (SRT, R-42E61)
TR: TR Vmax	Peak Systolic Velocity (LN, 11726-7)	Flow Direction: Regurgitant Flow (SRT, R-42E61)
Tricuspid Valve: TV A pt	Tricuspid Valve A Wave Peak Velocity (LN, 18030-7)	Flow Direction: Antegrade Flow (SRT, R-42047)
Tricuspid Valve: TV C-O dur Tei Index: TV C-O dur	Tricuspid Valve Closure to Opening Time (SRT, G-0389)	
Tricuspid Valve: E/A	Tricuspid Valve E to A Ratio (LN, 18039-8)	Flow Direction: Antegrade Flow (SRT, R-42047)
Tricuspid Valve: TV E pt	Tricuspid Valve E Wave Peak Velocity (LN, 18031-5)	Flow Direction: Antegrade Flow (SRT, R-42047)

Label	Code Meaning (Coding Scheme Designator, Code Value)	Modifiers
Tricuspid Valve: TV VTI	Velocity Time Integral (LN, 20354-7)	Flow Direction: Antegrade Flow (SRT, R-42047)
TR: TR VTI	Velocity Time Integral (LN, 20354-7)	Flow Direction: Regurgitant Flow (SRT, R-42E61)

9.3.10 Aorta

Label	Code Meaning (Coding Scheme Designator, Code Value)	Modifiers
Aorta	Finding Site: Aorta (SRT, T-42000)	
AV/LA: AOd	Aortic Root Diameter (LN, 18015-8)	Cardiac Cycle Point: Diastole (SRT, F-32010)
AV/LA(M): AOd	Aortic Root Diameter (LN, 18015-8)	Cardiac Cycle Point: Diastole (SRT, F-32010) Image Mode: M-Mode (SRT, G-0394)
AV/LA: AOs	Aortic Root Diameter (LN, 18015-8)	Cardiac Cycle Point: Systole (SRT, F-32020)
AV/LA(M): AOs	Aortic Root Diameter (LN, 18015-8)	Cardiac Cycle Point: Systole (SRT, F-32020) Image Mode: M-Mode (SRT, G-0394)
Aortic Valve: Ao Arch PGmean	Mean Gradient (LN, 20256-4)	Finding Site: Aortic Arch (SRT, T-42300) Flow Direction: Antegrade Flow (SRT, R-42047)
Aortic Valve: Ao Arch Vmean	Mean Velocity (LN, 20352-1)	Finding Site: Aortic Arch (SRT, T-42300) Flow Direction: Antegrade Flow (SRT, R-42047)
Aortic Valve: Ao Arch PGmax	Peak Gradient (LN, 20247-3)	Finding Site: Aortic Arch (SRT, T-42300) Flow Direction: Antegrade Flow (SRT, R-42047)
Aortic Valve: Ao Arch Vmax	Peak Systolic Velocity (LN, 11726-7)	Finding Site: Aortic Arch (SRT, T-42300) Flow Direction: Antegrade Flow (SRT, R-42047)
Aortic Valve: Ao Arch VTI	Velocity Time Integral (LN, 20354-7)	Finding Site: Aortic Arch (SRT, T-42300) Flow Direction: Antegrade Flow (SRT, R-42047)

9.3.11 Pulmonary Artery

Label	Code Meaning (Coding Scheme Designator, Code Value)	Modifiers
Pulmonary Artery	Finding Site: Pulmonary Artery (SRT, T-44000)	
Pulmonary Valve: PA Act	Acceleration Time (LN, 20168-1)	Flow Direction: Antegrade Flow (SRT, R-42047)
PR: PAEDP	Pulmonary Artery Pressure (SRT, F0212C)	Cardiac Cycle Point: End Diastole (SRT, F-32011)

9.3.12 Pulmonary Venous Structure

Label	Code Meaning (Coding Scheme Designator, Code Value)	Modifiers
Pulmonary Venous Structure	Finding Site: Pulmonary Veins (SRT, T-48581)	
Pulmonary Vein: PVd Dect	Deceleration Time (LN, 20217-6)	Cardiac Cycle Point: Diastole (SRT, F-32010)
Pulmonary Vein: PVa Dur	Pulmonary Vein A-Wave Duration (SRT, G-038B)	
Pulmonary Vein: PVa Vel	Pulmonary Vein Atrial Contraction Reversal Peak Velocity (LN, 29453-8)	Cardiac Cycle Point: Diastole (SRT, F-32010)
Pulmonary Vein: PVd VTI	Pulmonary Vein D-Wave Velocity Time Integral (SRT, G-038D)	
Pulmonary Vein: PVd Vel	Pulmonary Vein Diastolic Peak Velocity (LN, 29451-2)	Cardiac Cycle Point: Diastole (SRT, F-32010)
Pulmonary Vein: PVs VTI	Pulmonary Vein S-Wave Velocity Time Integral (SRT, G-038C)	
Pulmonary Vein: Sys Fraction	Pulmonary Vein Systolic Fraction (99SIEMENSUS, CA_PVE_SF)	
Pulmonary Vein: PVs1 Vel	Pulmonary Vein Systolic Peak Velocity (LN, 29450-4)	Topographical Modifier: Peak1 (99SIEMENSUS, Peak1)
Pulmonary Vein: PVs2 Vel	Pulmonary Vein Systolic Peak Velocity (LN, 29450-4)	Topographical Modifier: Peak2 (99SIEMENSUS, Peak2)
Pulmonary Vein: PVs2/PVd	Pulmonary Vein Systolic to Diastolic Ratio (LN, 29452-0)	

9.3.13 Cardiac Shunt Study

Label	Code Meaning (Coding Scheme Designator, Code Value)	Modifiers
Cardiac Shunt Study	Finding Site: Cardiac Shunt Study (SRT, P5-30031)	
Qp/Qs: Qp/Qs	Pulmonary-to-Systemic Shunt Flow Ratio (LN, 29462-9)	Measurement Package Membership: DP Qp/Qs (99SIEMENSUS, MPDPQp2Qs)